CDM

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April 3, 2006

Ms. Rachel N. Loftin
Remedial Project Manager
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

Subject: Hewitt Landfill Property, North Hollywood Operable Unit, 7361 Laurel Canyon Blvd., Los Angeles, California, CalMat Co.

Dear Ms. Loftin:

On behalf of Vulcan Materials Company (dba CalMat Co.), CDM provides this response to your request for groundwater monitoring at the above site as described in your February 10, 2006 letter addressed to CalMat Co.

Three facility wells are associated with the site. A well location map, well construction information, and previous laboratory analytical results are provided in the attachment to this letter. One well, 4899, is located just west (upgradient) of the site, and wells 4909C and 4909F are located along the eastern site boundary (downgradient). Groundwater flows generally west to east.

The facility wells were last sampled in February 1989. Existing facility-well data indicate that detectable concentrations of nitrate, chloride, dissolved solids, PCE, and TCE exist both downgradient and upgradient, suggesting an upgradient source.

Since receiving your letter, Vulcan retained CDM to conduct a down-hole video survey on wells 4899 and 4909F on March 14, 2006, the purpose of which was to evaluate the wells' suitability for sampling after numerous inactive years. Well 4909C is owned by the Los Angeles Department of Water and Power (LADWP), and contained a non-removable packer that prevented us from conducting a down-hole video survey. Based on results of the down-hole video survey, CDM concluded that wells 4899 and 4909F will require redevelopment prior to sampling.

Site operations historically consisted of extraction and production of sand and aggregate materials until 1962. The site was thereafter utilized as a solid waste landfill until it was officially closed on November 12, 1975. Only non-hazardous solid waste and inert waste were accepted in the landfill. No liquid or hazardous wastes were accepted. The lowest elevation of landfill materials is approximately 700 feet amsl. Given groundwater elevations of between 480 and 490 feet amsl during the period of record, the landfill waste has not been in contact with groundwater.

In accordance with EPA's February 10, 2006 request, CDM will collect groundwater samples from the three facility wells. Wells will be purged until at least three casing volumes have been pumped, or water quality parameters (turbidity, pH, dissolved oxygen) have stabilized to within 10% of the previous measurement. Purging and sampling will be conducted using an electric submersible pump. CDM will utilize the dedicated pump in well 4909C, and a portable Grundfos pump (or equivalent) on wells 4899 and 4909F. Before sampling each wells, reusable equipment will be decontaminated using a steam cleaner or using an alconox solution. Purged and decontamination fluids will be contained onsite in 55-gallon drums pending transport and offsite disposal.

Each sample will be submitted to a State-certified environmental laboratory for the following analyses:

- PCE, TCE, 1,1-DCE, MTBE, 1,4-DCA, cis-1,2-DCE, and carbon tetrachloride by EPA Method 8260
- 1,2,3-TCP by EPA Method 504.1
- Title 22 Metals by EPA 6010/7471 (not filtered)
- Hexavalent Chromium by EPA Method 7196
- 1,4-dioxane by EPA Method 8270 SIM
- NDMA by EPA 1625
- Perchlorate by EPA Method 314.0
- Nitrate/Nitrite by EPA 353.3/354.1
- Anions and Cations by EPA Method 300.0/6010B
- Dissolved oxygen by EPA Method 360.1 (will be performed in the field)
- Sulfide by EPA Method 376.2 (EPA Method 9030, listed in your letter, is not applicable to aqueous samples)
- Dissolved (using 0.45 µm field filtration) iron and manganese

In addition to the primary groundwater samples described above, CDM will also collect quality assurance samples. These samples will consist of one equipment blank, one duplicate sample (from well 4899), and one trip blank. These samples will be submitted to the laboratory for the same analyses as the primary samples.

CDM will conduct well refurbishment by April 30, 2006, and will complete sampling, analyses and reporting by May 31, 2006. This schedule assumes reasonable availability of qualified subcontractors and a timely response from LADWP regarding our access to well 4909C.

If you have any questions regarding this response, please contact Brian Anderson of Vulcan.

Very truly yours,

John C. Bennett, P.G.
Project Manager
Camp Dresser & McKee Inc.

619/778-1938

cc: Brian Anderson, P.G., Vulcan
Brian Ferris, Vulcan

Enclosure:
Attachment

LAW ENVIRONMENTAL, INC.

3420 N. SAN FERNANDO BLVD.
SUITE 200
BURBANK, CALIFORNIA 91504
818-848-0214
(FAX 818-848-1674)

June 29, 1989

Calmat Properties
3200 San Fernando Road
Los Angeles, California 90065

Project No. 58-7057

Attention: Mr. George Cosby
Vice President, Calmat Properties

Gentlemen:

SOLID WASTE ASSESSMENT TEST (SWAT)
SUPPLEMENTARY MONITORING REPORT
Hewitt Landfill (closed)
Laurel Canyon Boulevard north of Sherman Way
North Hollywood District, Los Angeles, CA

This report presents the results of surface, unsaturated zone and supplemental ground water sampling analyses and water level measurements from the Hewitt Landfill monitoring wells. This report contains four quarters of data and is the final SWAT Monitoring Report. It completes the 1988 data requirements by the Regional Water Quality Control Board (RWQCB), Los Angeles Region, under the Calderon Act.

The purpose of this supplemental report is to present data in compliance with the SWAT monitoring plan, which was approved by the RWQCB on November 2, 1987. Presented are the results of the

monitoring program, our interpretation of the data, and our conclusions on whether these sites are leaking hazardous compounds into the ground water. Our previous SWAT report, dated June 6, 1988, provides much of the background information necessary for this supplemental report and is an integral part of this study.

SWAT SUMMARY

The supplemental SWAT ground water monitoring plan for 1988 is essentially the same as the existing ground water monitoring program. SWAT monitoring was performed quarterly throughout 1988. The SWAT report was submitted to the RWQCB on June 6, 1988; analyses received after this date are presented herein as the SWAT supplementary monitoring report.

Site information is included in the SWAT proposal which was prepared in accordance with the Solid Waste Assessment Test guidance document by the State Water Resources Control Board, dated October 1986. This report has been prepared in accordance with the SWAT proposal and related correspondence.

Our previous SWAT report, dated June 6, 1988, contains site characteristics, hydrogeology data and our conclusions concerning

existing conditions at Hewitt Landfill. The previous work provided much of the information necessary for this report. The landfill was closed in 1979.

Our professional services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geologists practicing in this or similar locations. No other warranty, expressed or implied, is made regarding the professional advice included in this report. This report was prepared for Calmat Properties by and under the supervision of certified engineering geologists with a minimum of ten years of experience in ground water hydrology.

GROUND WATER MONITORING PLAN

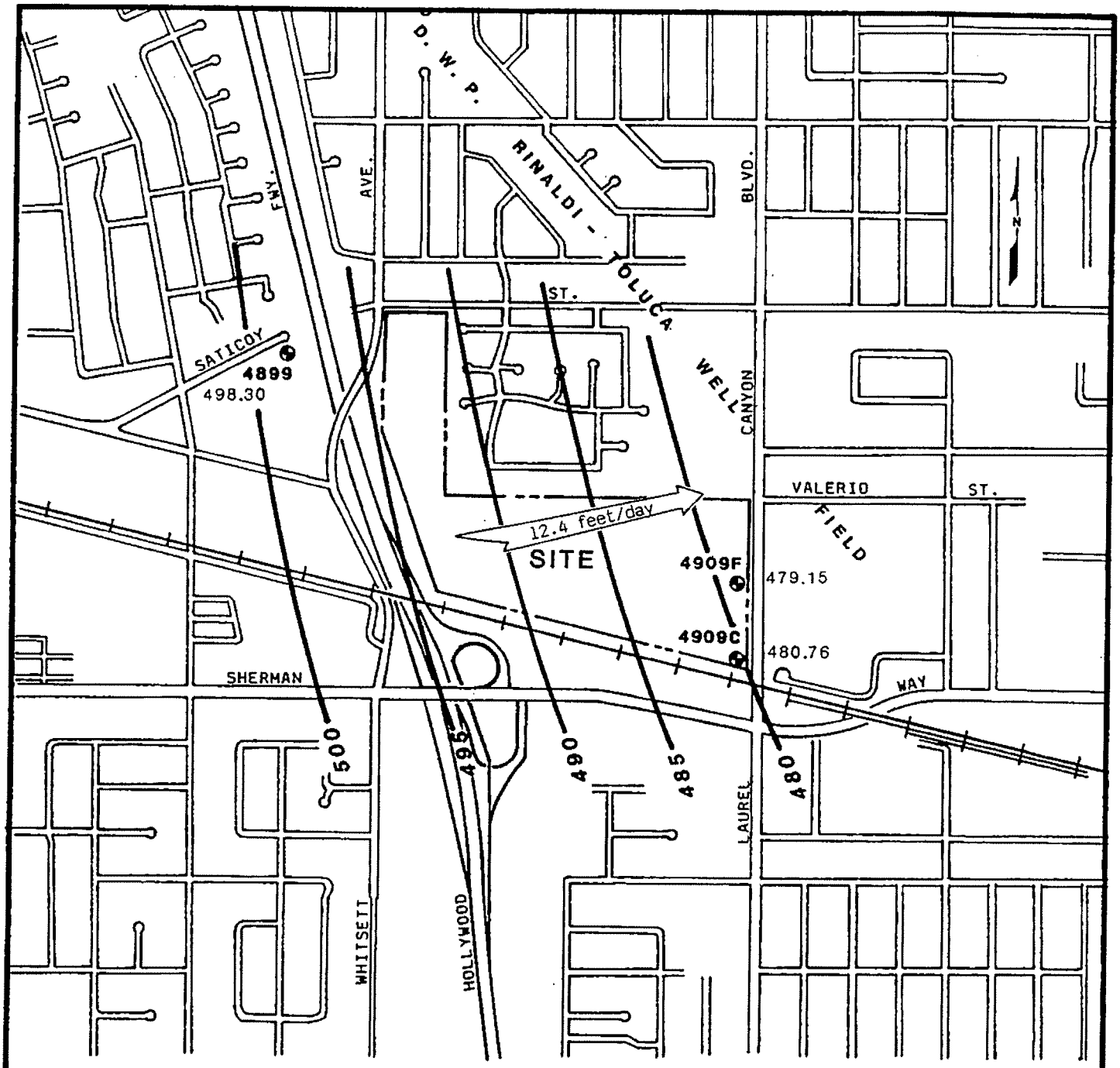
The monitoring well network for the landfill currently consists of three wells, as shown on Figure 1, Ground Water Contours. The direction of ground water movement, historically from northwest to southeast, was taken into account when selecting these monitoring well locations. The pattern of ground water flow has changed since the SWAT program began. Upgradient Well 4899 shows background water quality data. Downgradient Wells 4909C and 4909F provide data on the quality of water passing beneath the site.

GROUND WATER LEVELS AND MOVEMENT

1988 ground water levels, measured quarterly, showed a decline of approximately 20 feet in all monitoring wells. Figure 2 is a hydrograph of downgradient Monitoring Well 4909C. In early Fall 1988, the ground water flow direction shifted 90 degrees to an east northeast flow direction. This water level decline and directional shift may be caused by the Department of Water and Power (DWP) decreasing pumping from its North Hollywood Well Field, southeast of Hewitt Landfill, and increasing pumping at the nearby DWP Rinaldi-Toluca Well Field, a linear well field located to the northeast (see Figure 1). As of March 1989, DWP is pumping 500 acre-feet per month of ground water from each of 8 water wells in the Rinaldi-Toluca Well Field, and has plans to pump 7 additional water wells.

WATER QUALITY

Water quality has been monitored at the Hewitt Landfill for five years. The monitoring program consists of selected field and laboratory analyses, including alkalinity, conductivity (EC), pH, general minerals, and selected organic and trace organic compounds. Temperature, pH, CO_2 (methane gas), EC and alkalinity are measured in the field. SWAT analyses for 1988 included EPA Methods 624 and 625 (volatile and semi-volatile organics), general minerals



EXPLANATION

4909C — MONITORING WELL LOCATION AND NUMBER

500 — LINE OF EQUAL GROUND WATER ELEVATION IN FEET ASL

498.30 — GROUND WATER ELEVATION IN FEET ASL

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U. S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

0 1000
FEET

GROUND WATER CONTOURS

FEBRUARY 1989

FIGURE 1

LAW ENVIRONMENTAL, INC.

PROJECT No. SB-7052 DATE 06-09-89 PROJ. MGR. AC DFTR. MA

including boron and fluoride, ICP metals, COD (chemical oxygen demand), TOC (total organic carbon) and TOX (total organic halides). Results of the monitoring program through February 1989 are summarized in Appendix A. Laboratory analyses of the water samples collected in February 1989 are presented at the end of Appendix A, along with the standard Chain-of-Custody documentation.

The general trends noted in the 1987 SWAT report have continued in 1988. Both seasonal and long term water quality trends are apparent in the monitoring wells with increasing chloride levels and decreasing water levels becoming more pronounced. The statistical analysis shows that during the 1988 SWAT data collection period, inorganic and organic concentrations remained within the historical database range.

Ground water sampled in February 1989 from upgradient Monitoring Well 4899 showed an increase in TOC, COD and pH. Decreases were noted in NO_3 (nitrate), HCO_3 (bicarbonate), EC, and TDS (total dissolved solids). All other constituents remained constant.

Downgradient in Wells 4909C and 4909F, ground water samples from February 1989 showed elevated HCO_3, Cl (chloride), and PCE (perchloroethylene), and decreased levels NO_3 and CO_2. All other constituents remained constant. The trace amounts of volatile

organic compounds found in water from the downgradient wells may be attributed to transport beneath the landfill from the upgradient area.

In order to interpret the water quality trends, a brief ground water flow explanation is necessary. The downgradient monitoring well analysis shows solvent levels that either represent a migrating solvent plume or contaminants released by the landfill. Assuming the average ground water flow velocity is 12.4 feet per day (February 1989, see Appendix B), solvents that first appeared in the upgradient monitoring well would take about nine months to appear in the downgradient monitoring wells. For example, in April 1988, total solvents (PCE, TCE (trichloroethylene), DCA (dichloroethane), etc.) were less than 7 micrograms per liter at upgradient Monitoring Well 4899. This solvent concentration should be compared with the February 1989 analysis at downgradient Well 4909F, which shows a similar solvent level. It appears, therefore, that the Hewitt Landfill did not release the solvents as monitored in the downgradient monitoring wells in February 1989. Rather, the landfill was simply in the flow path of a migrating solvent plume.

The interpretation of water quality conditions shows many factors are simultaneously operating at Hewitt Landfill. All may affect water quality. Travel times will shorten as DWP increases pumping of the nearby Rinaldi-Toluca Well Field. Also, different

solvents travel in the ground water at different rates due to partitioning by clay particles. The landfill is within an aquifer that has been affected by human activity. The observed pattern of contamination suggests multiple small sources of contamination. Long term water level changes, as well as changes in flow direction, may also affect ground water quality. The low concentrations of all the downgradient monitored parameters (except hardness) indicate that the Hewitt Landfill is not measurably affecting water quality.

STATISTICAL DISTRIBUTION AND WATER QUALITY HISTORY CHARTS

Figure 3 is an example of how the statistical distribution graphs (Figures 4 through 9) work. Figures 4 through 16 were selected from the database for both representative conditions upgradient of Hewitt Landfill and to show the status of important indicator parameters. Each figure includes a brief data interpretation. Figures 4 through 9 are statistical distribution graphs for concentrations of selected parameters NO_3, Cl, pH (field), HCO_3, PCE and TOX at the three monitoring wells. Figures 10 through 16, the water quality history charts, show the variations in concentrations of selected parameters NO_3, Cl, HCO_3, PCE and TOX versus time for each monitoring well. The shape of the concentration curves on the charts show that substances spilled

close to a monitoring well are still highly concentrated and appears graphically as a narrow (because a small plume width takes a short time to pass the well) and high (high concentration) curve. On the other hand, a substance spilled some distance away from a monitoring well spreads out, resulting in dilution at the plume edges. This appears on the charts as a wide (because more time is taken for a wide plume width to pass the well) and low (lowering concentrations) curve. Figures 17 through 22 show the areal distribution of parameters NO_3, pH, HCO_3, Cl, and TOX.

SURFACE WATER SAMPLING

Surface water is not affected by the landfill because the trash is covered by up to 20 feet of earth fill. Any runoff would be affected by current land use at the site, which is used for outdoor storage yards for equipment and cars. Therefore, surface water sampling was waived for this site.

LYSIMETER RESULTS

Two lysimeters were installed at the landfill in April 1988 to monitor the vadose zone, the unsaturated sediments above the water table. Repeated attempts have been made to obtain samples from them with no success. We attribute this to the extremely adverse conditions where the lysimeters were installed. These

instruments are not physically capable of extracting pore water from sand, gravel, and boulders. The instruments develop up to approximately 6 atmospheres of vacuum, but in these materials pore water is held at 15 to 20 atmospheres.

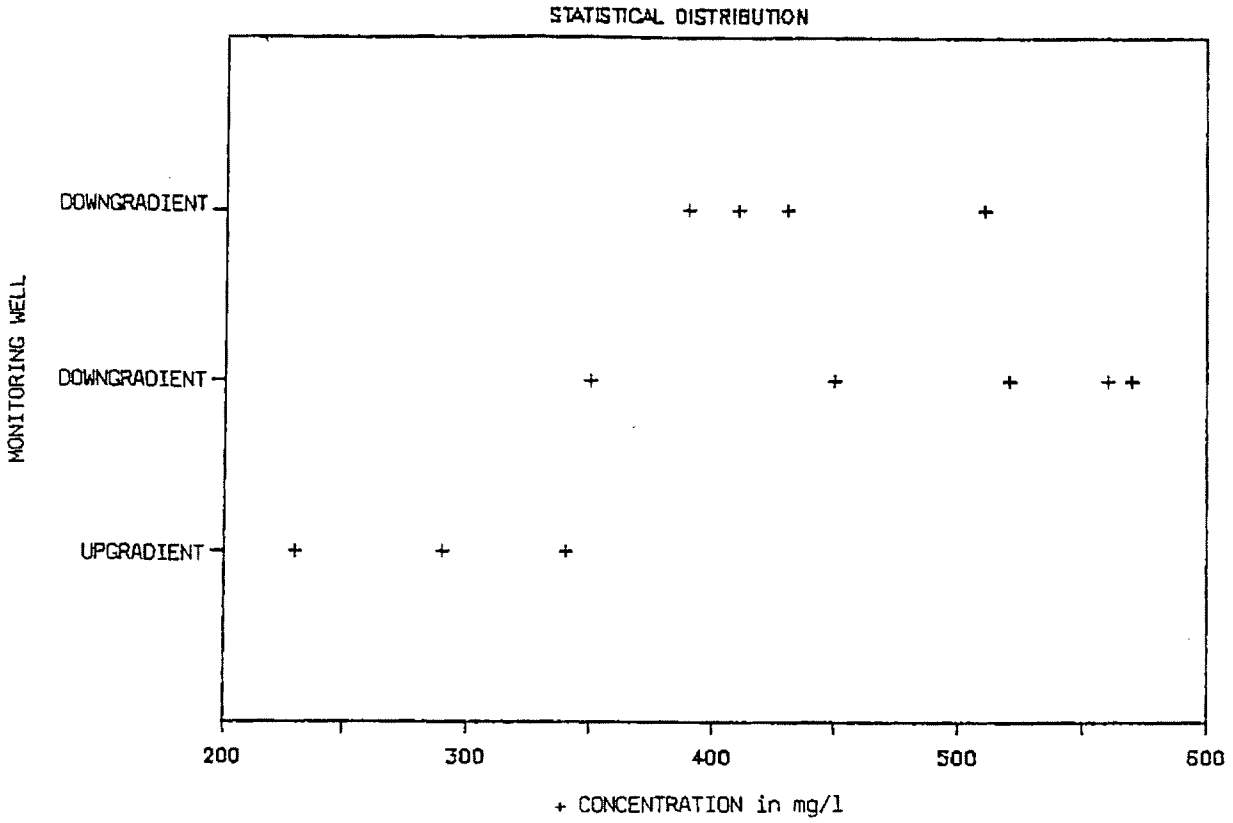


FIGURE 3

STATISTICAL DISTRIBUTION GRAPH EXAMPLE

This graph shows the frequency distribution for measurements of concentration of one parameter at each well in a monitoring network. It summarizes concentrations at all sampling times for each point. Using this graph, the data's mean, range and distribution may be visually estimated. In this case, downgradient levels are considerably higher than upgradient levels but are similar to each other, although one has a larger range than the other. This graph is the visual equivalent to calculating a T-distribution, which also compares means and standard deviations of upgradient and downgradient data sets.[1]

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[1] Reference: The Elements of Graphing Data, 1985, Bell Laboratories by W. Cleveland.

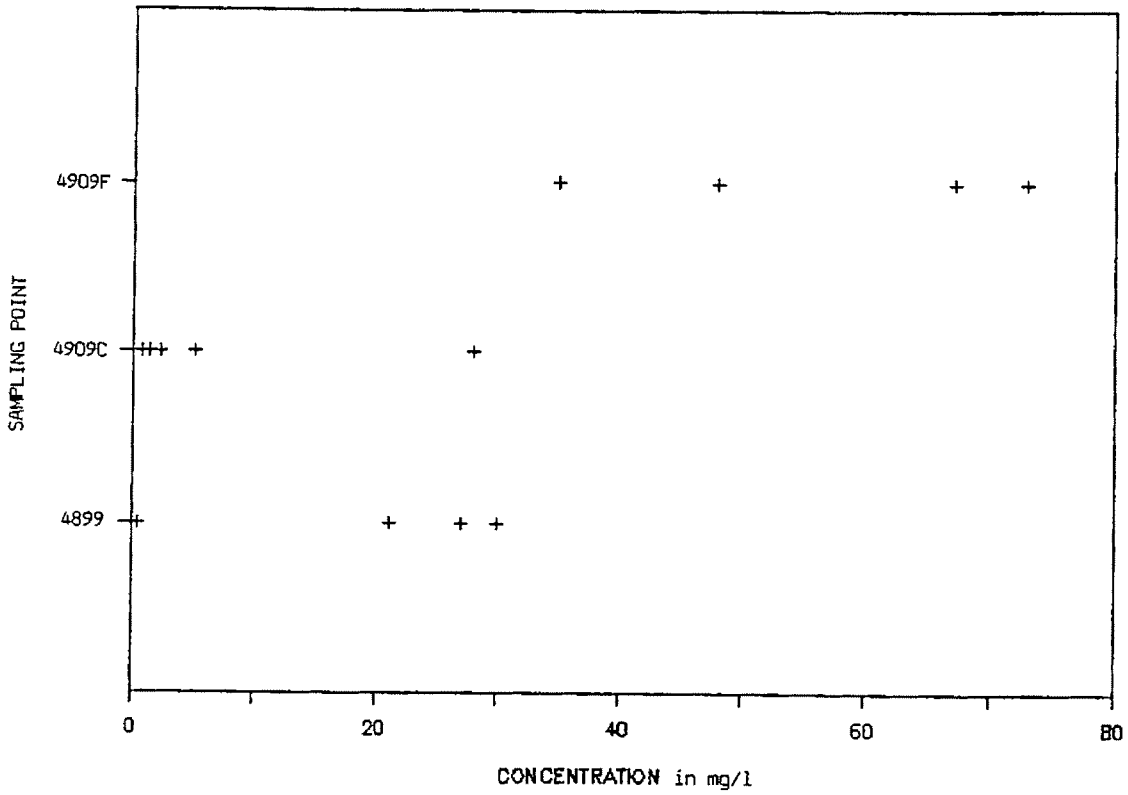


Figure 4

STATISTICAL DISTRIBUTION OF NITRATE

Levels of nitrate in downgradient Monitoring Well 4909F are higher than the upgradient Monitoring Well 4899 and downgradient Monitoring Well 4909C. Possible sources of nitrate could include previous surrounding land use. The wide point spread and persistent high concentration levels at Well 4909F shows a fairly large plume (originating from a distant source) is migrating through the area.

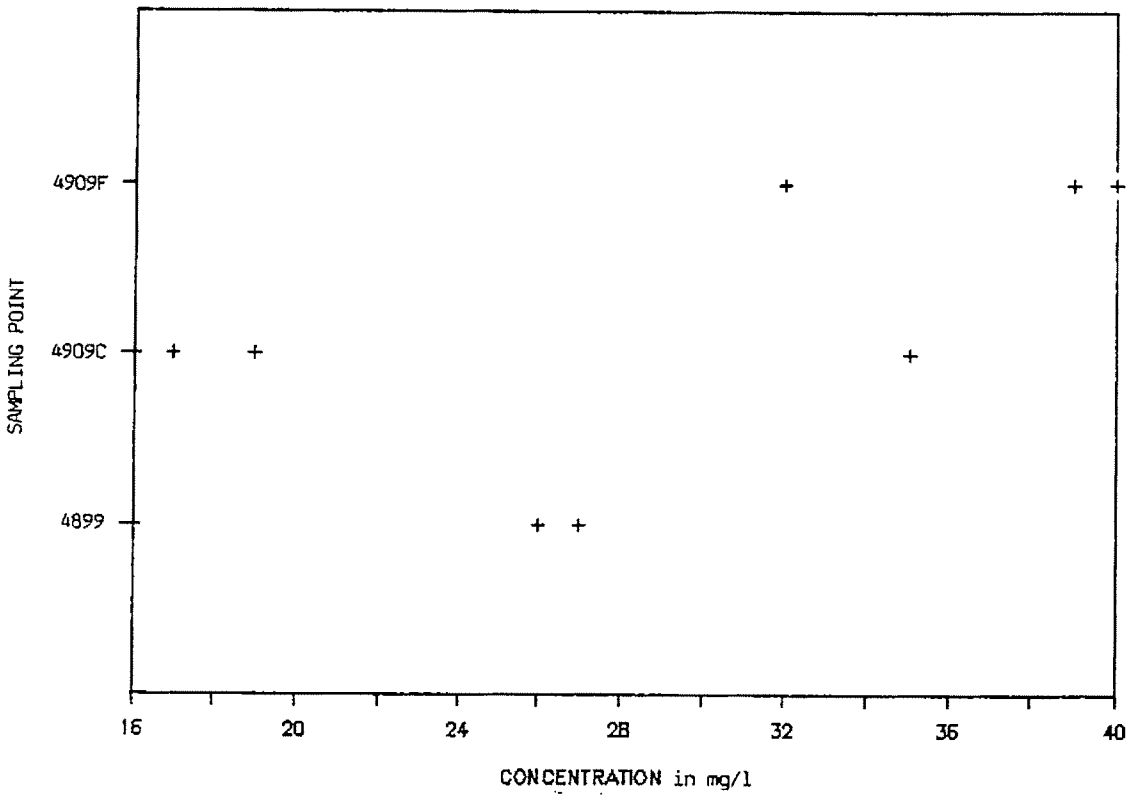


Figure 5

STATISTICAL DISTRIBUTION OF CHLORIDE

The split in chloride concentrations at downgradient Monitoring Well 4909C shows the existence of two chloride sources with varying water quality. This data indicates that Well 4909C receives ground water from two distinct aquifer subareas.

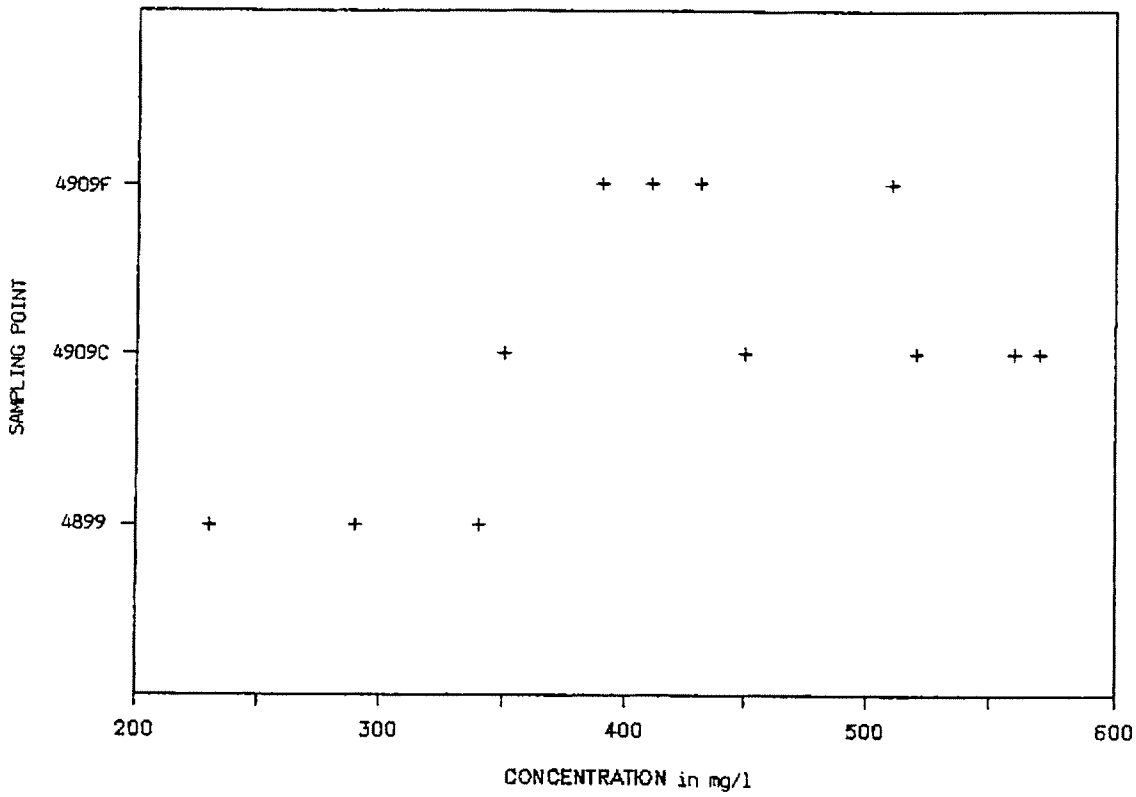


Figure 6

STATISTICAL DISTRIBUTION OF BICARBONATE

The higher bicarbonate levels downgradient of the landfill indicate the presence of landfill gas (CO_2). The CO_2 gas reacts with water to form bicarbonate.

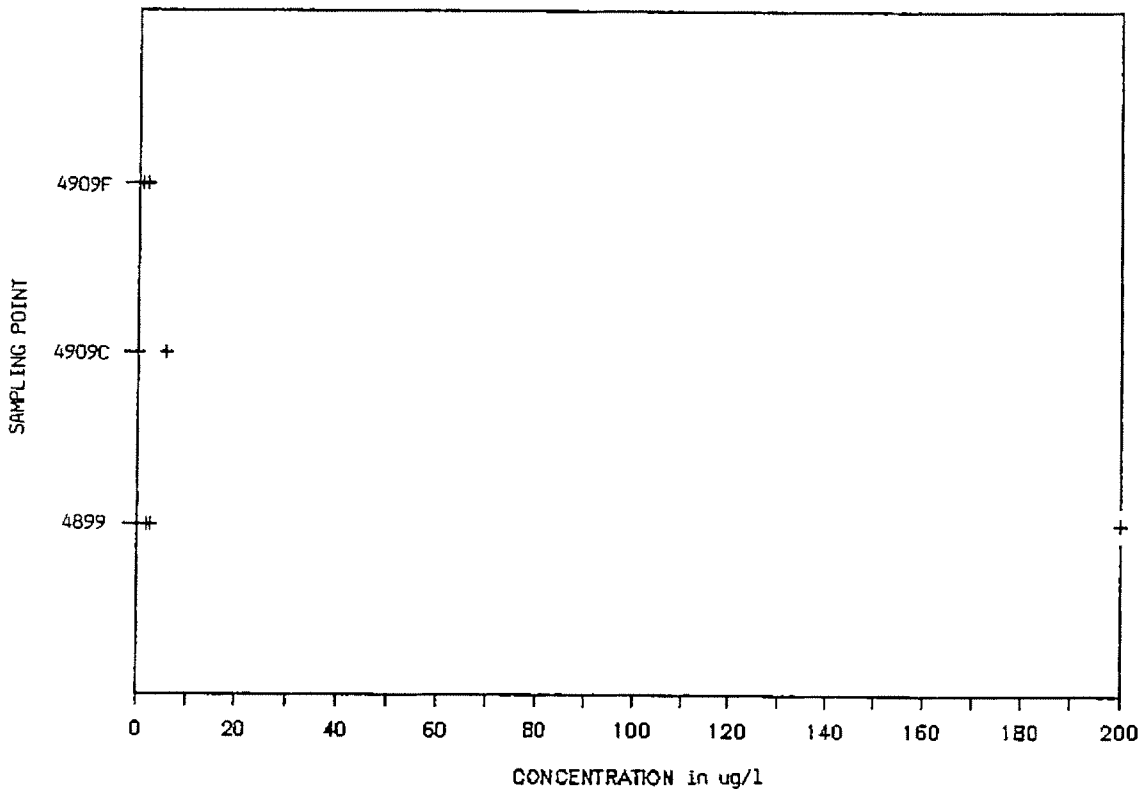


Figure 7

STATISTICAL DISTRIBUTION OF PERCHLOROETHYLENE

The single high concentration of perchloroethylene in upgradient Monitoring Well 4899 indicates a migrating solvent slug passed the area upgradient of the landfill in February 1987.

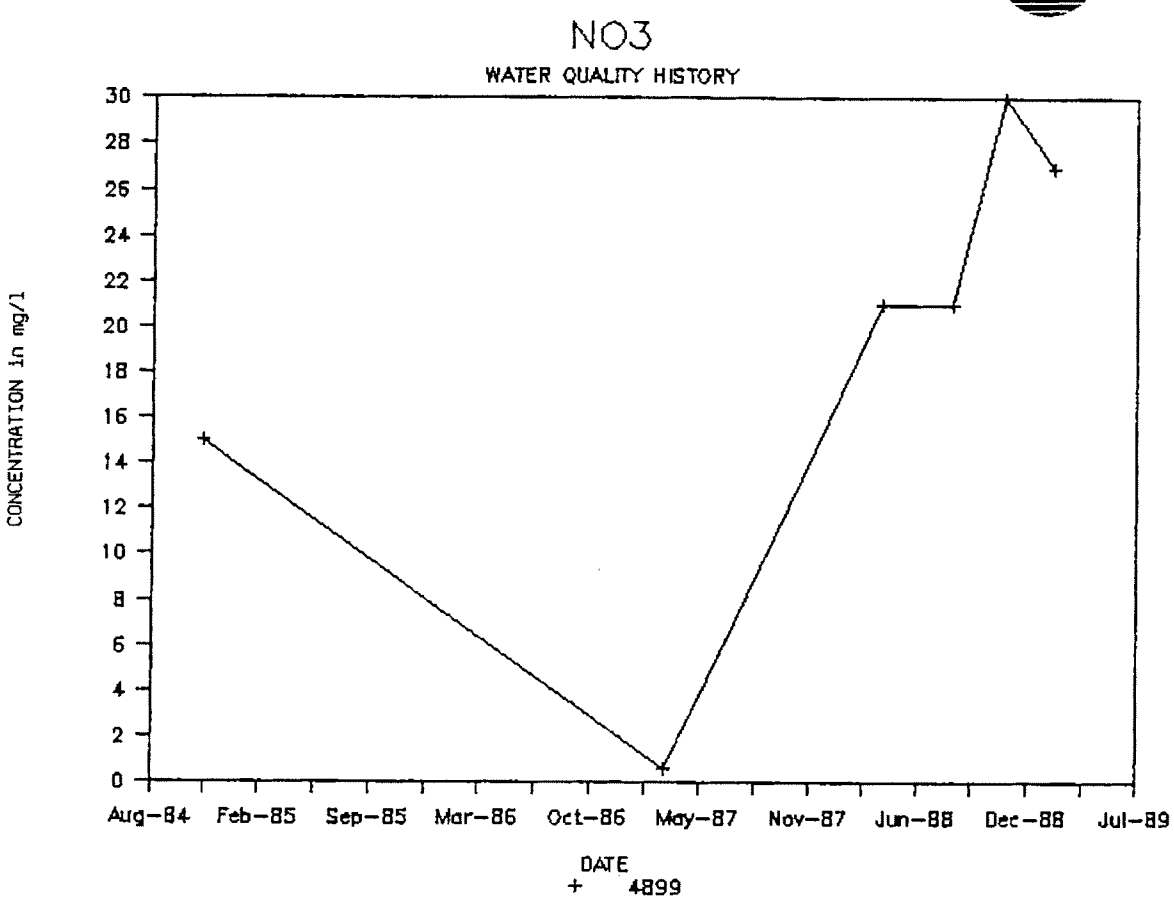


Figure 8

WATER QUALITY HISTORY OF NITRATE AT WELL 4899

This chart of Monitoring Well 4899 shows the passage of large nitrate slugs upgradient of the landfill.

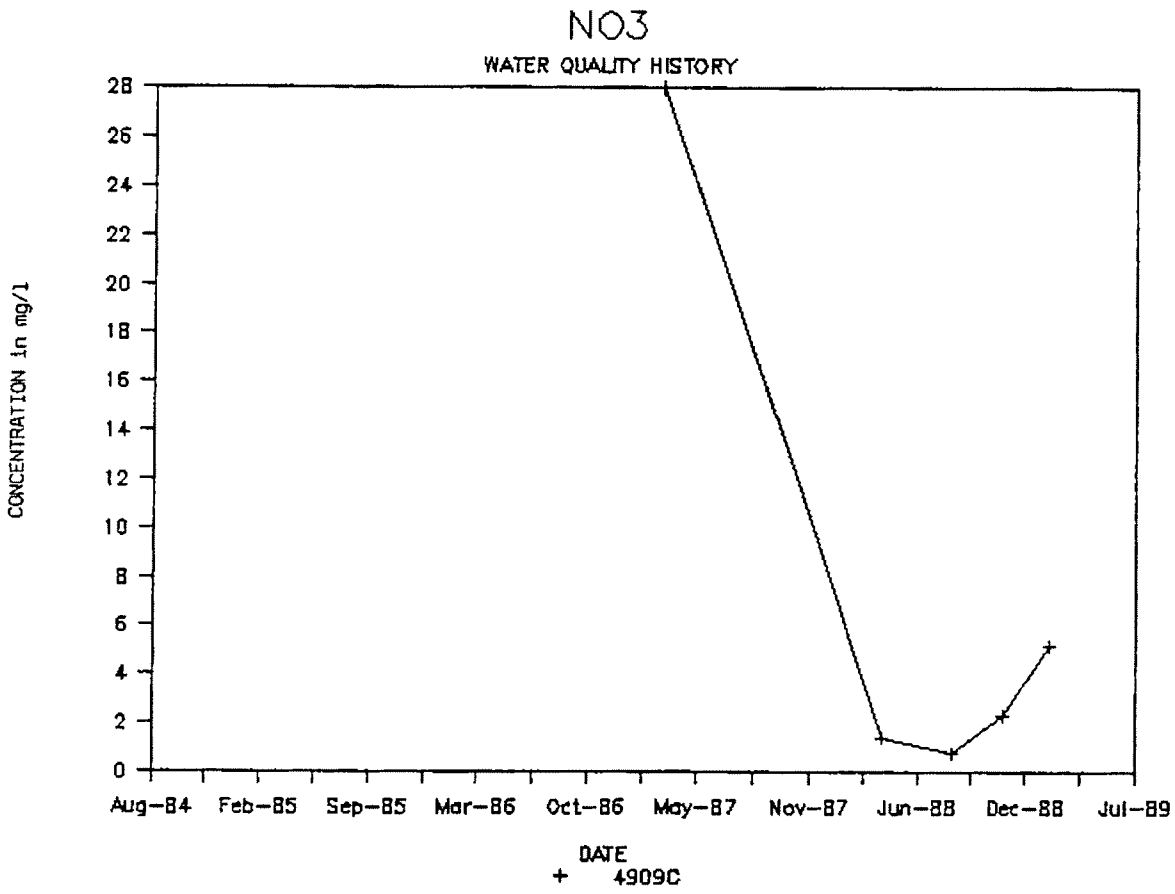


Figure 9

WATER QUALITY HISTORY OF NITRATE AT WELL 4909C

Downgradient Monitoring Well 4909C shows the passage of a large nitrate slug, similar in concentration to nitrate slugs seen in upgradient Well 4899 a year earlier.

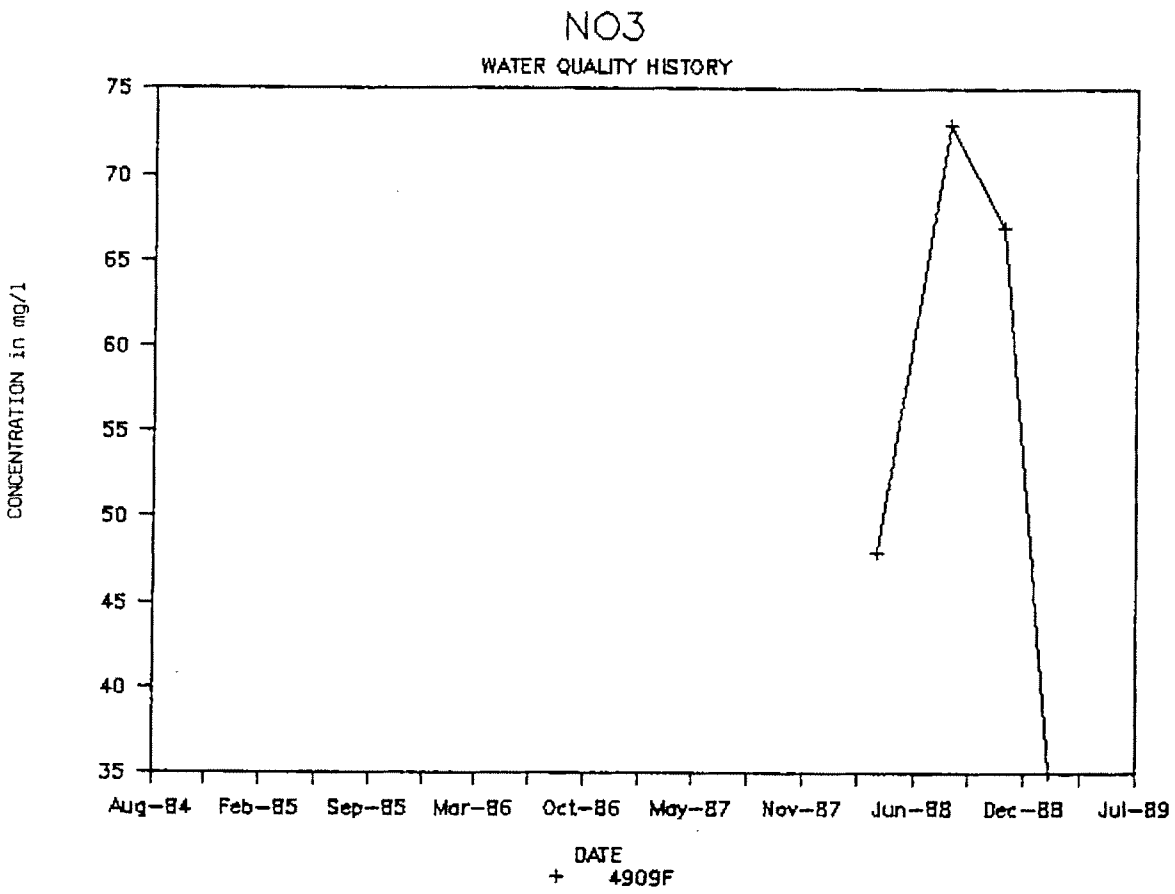


Figure 10

WATER QUALITY HISTORY OF NITRATE AT WELL 4909F

Downgradient Monitoring Well 4909F has higher nitrate concentrations than downgradient Monitoring Well 4909C. This variation in concentration may be due to either different concentrations in passing nitrate slugs, different nitrate sources, or a closer nitrate source.

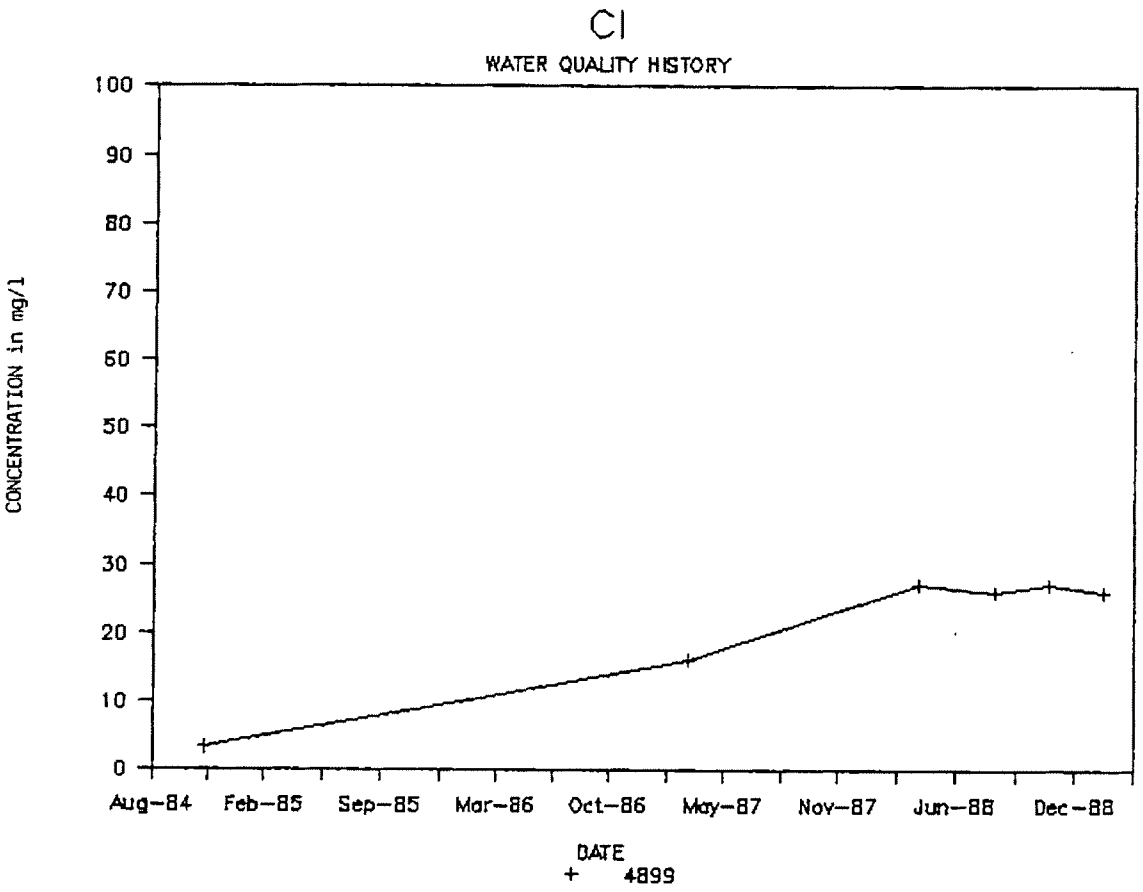


Figure 11

WATER QUALITY HISTORY OF CHLORIDE AT WELL 4899

There has been an overall rise in chloride concentration levels in upgradient Monitoring Well 4899 since November 1984. These rising levels could be in part related to the decrease in ground water levels, driving poorer quality water out of less permeable zones in the aquifer.

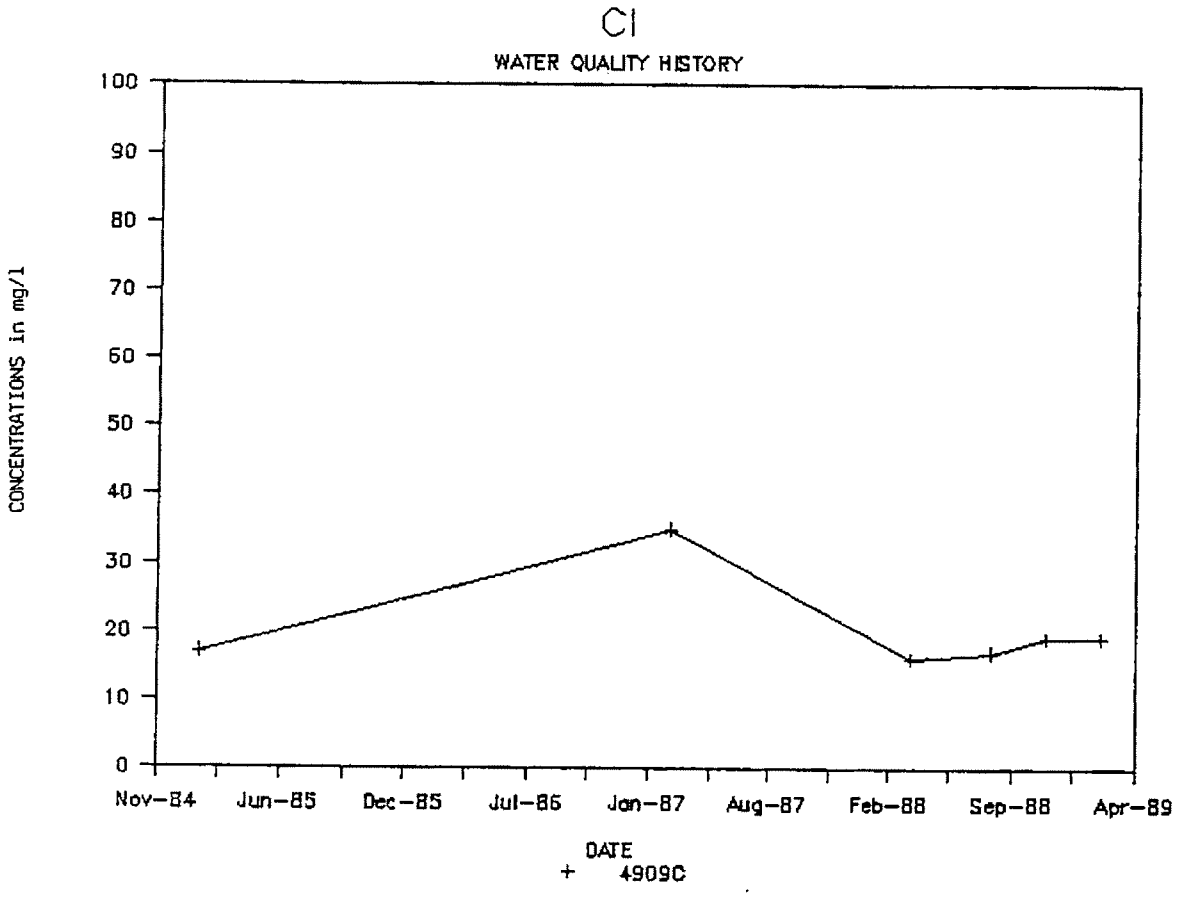


Figure 12

WATER QUALITY HISTORY OF CHLORIDE AT WELL 4909C

Note the overall decline in chloride concentration levels from January 1987 to February 1988 at downgradient Monitoring Well 4909C. This decrease may partially be due to the changing ground water flow direction caused by the Department of Water and Power pumping operations nearby and possibly indicates a different and lower chloride concentration source upgradient of Well 4909C.

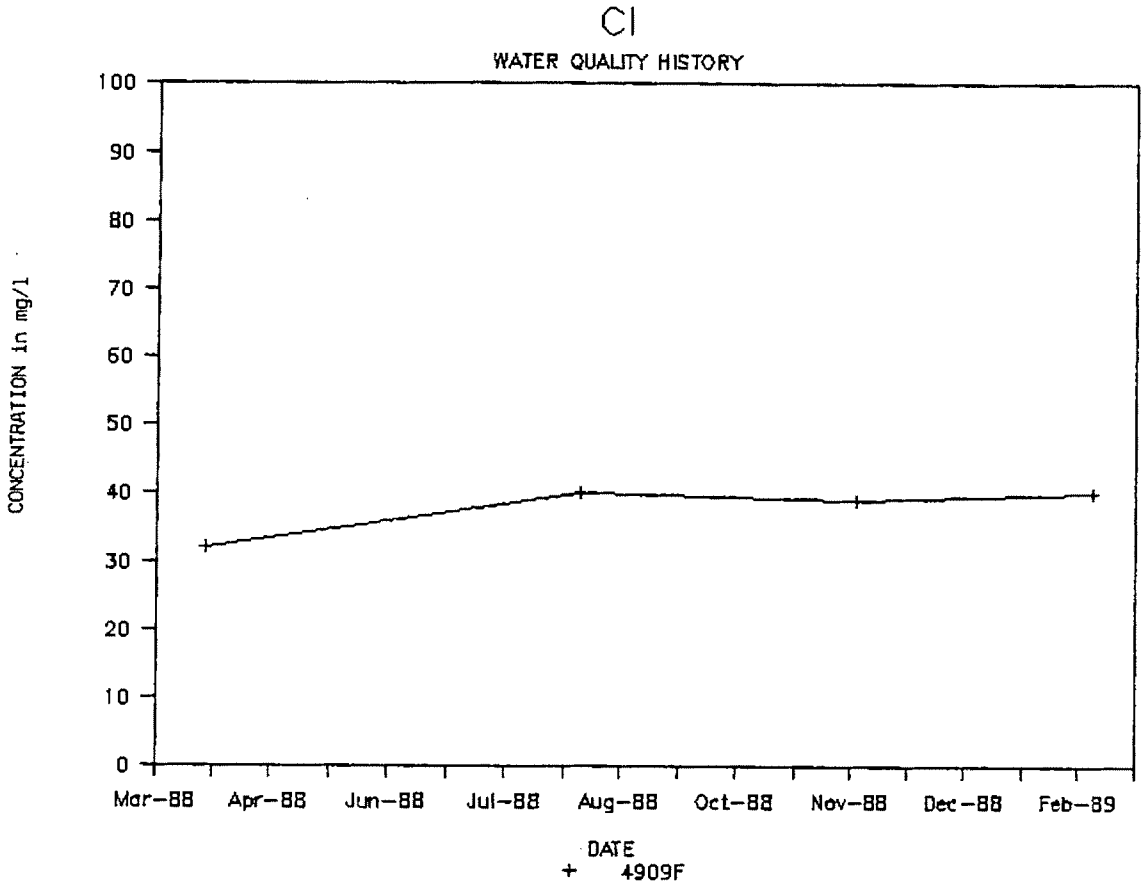


Figure 13

WATER QUALITY HISTORY OF CHLORIDE AT WELL 4909F

There has been a slight overall rise in chloride levels in downgradient Monitoring Well 4909F, since April 1988. These rising levels could be related in part to the decrease in ground water levels, draining poorer quality water out of less permeable zones in the aquifer.

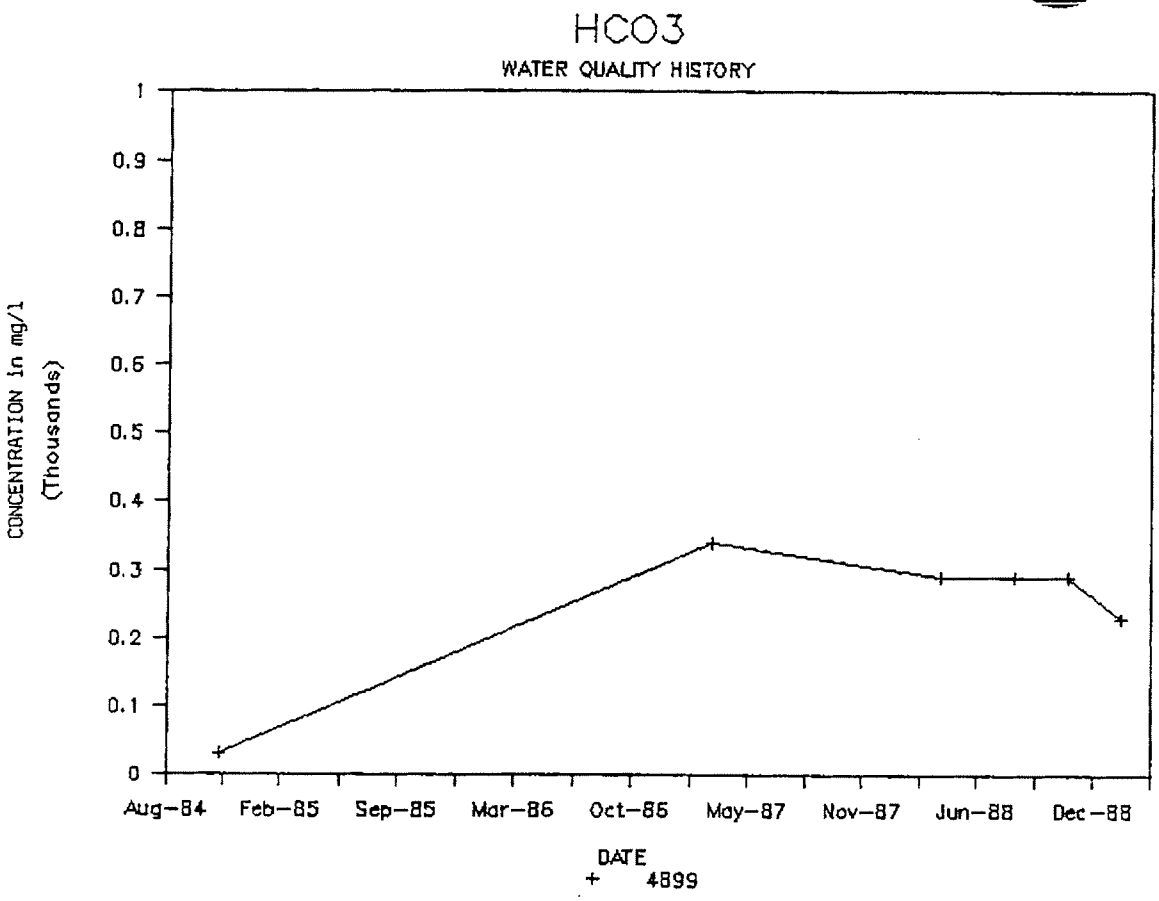


Figure 14

WATER QUALITY HISTORY OF BICARBONATE AT WELL 4899

Increasing concentration levels of bicarbonate have entered the area upgradient of the landfill and are declining as of November 1988.

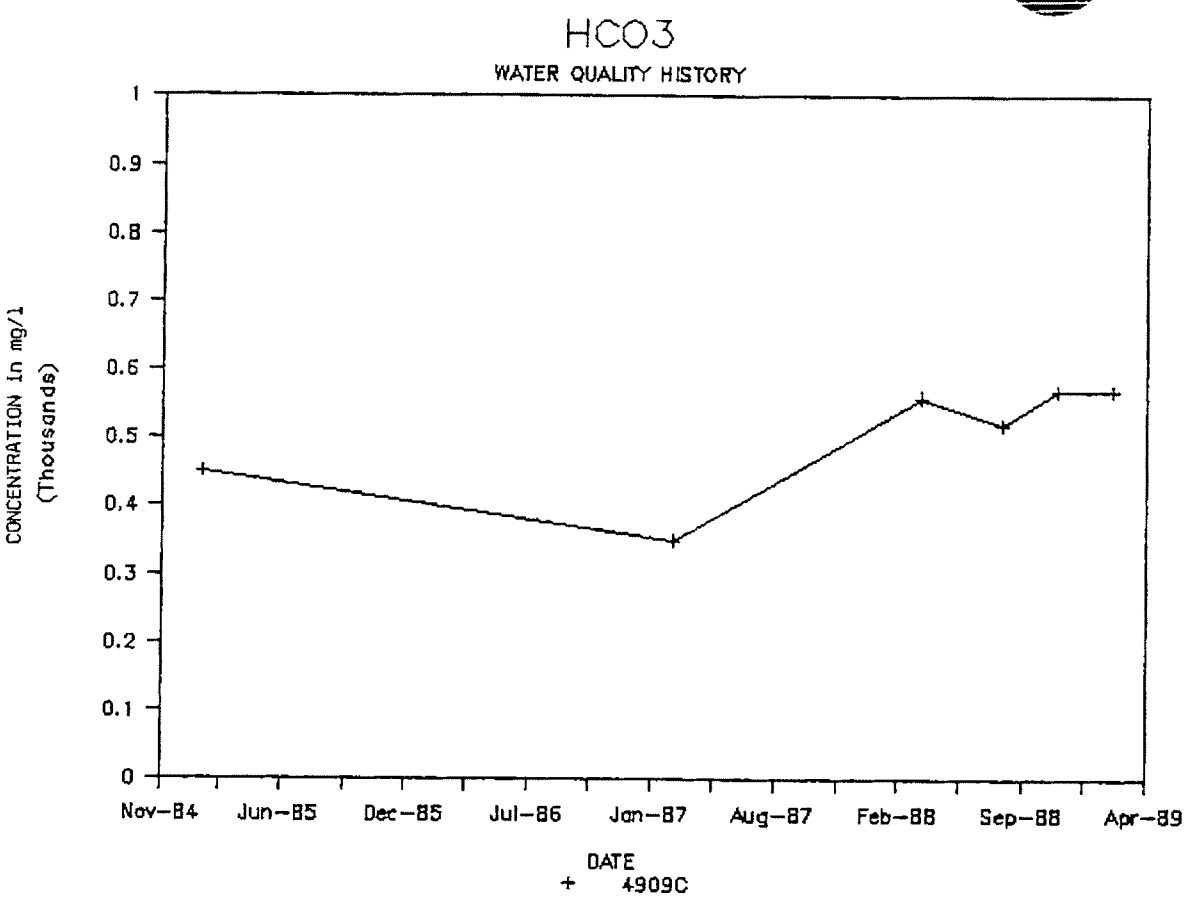


Figure 15

WATER QUALITY HISTORY OF BICARBONATE AT WELL 4909C

The overall rise in bicarbonate concentration levels in downgradient Monitoring Well 4909C is due to landfill gas (CO_2) reacting with water to produce bicarbonate.

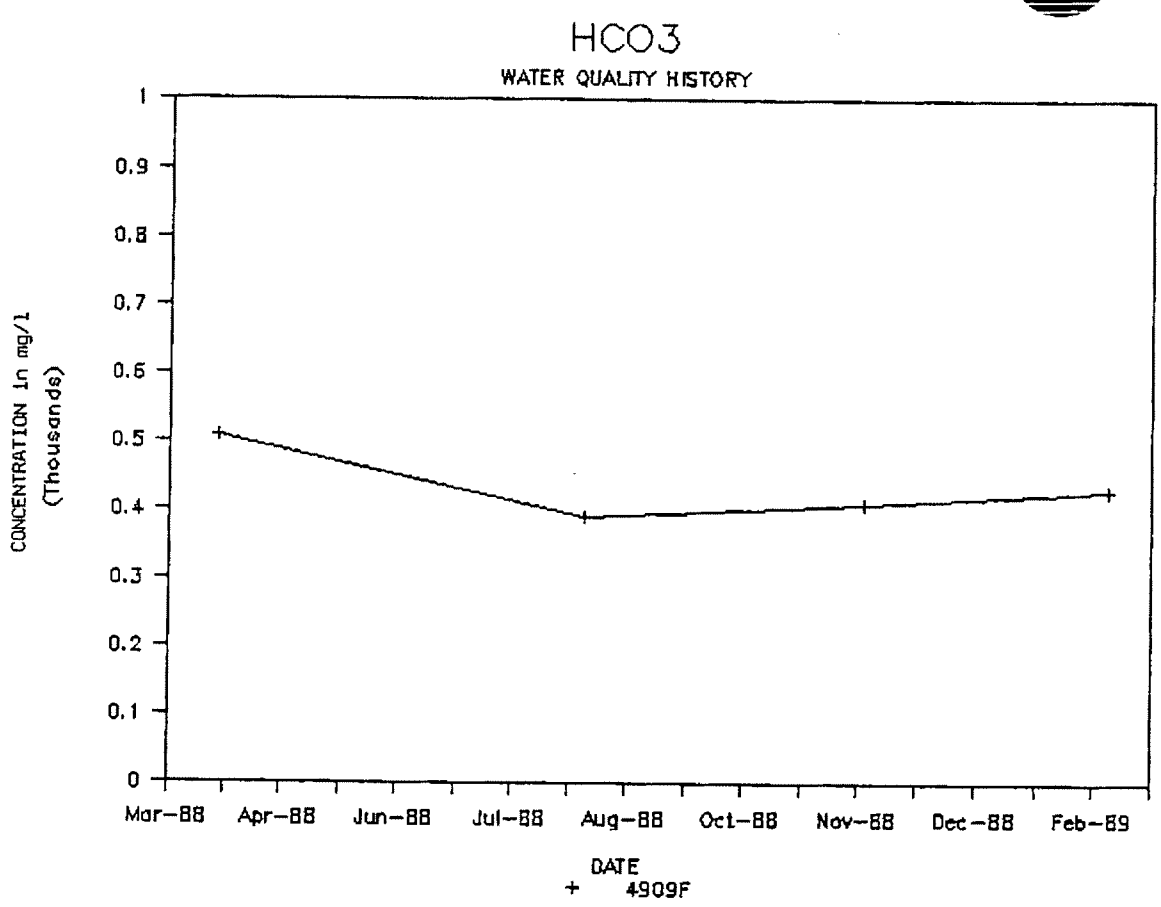


Figure 16

WATER QUALITY HISTORY OF BICARBONATE AT WELL 4909F

There has been an overall decline in bicarbonate concentration levels in downgradient Monitoring Well 4909F.

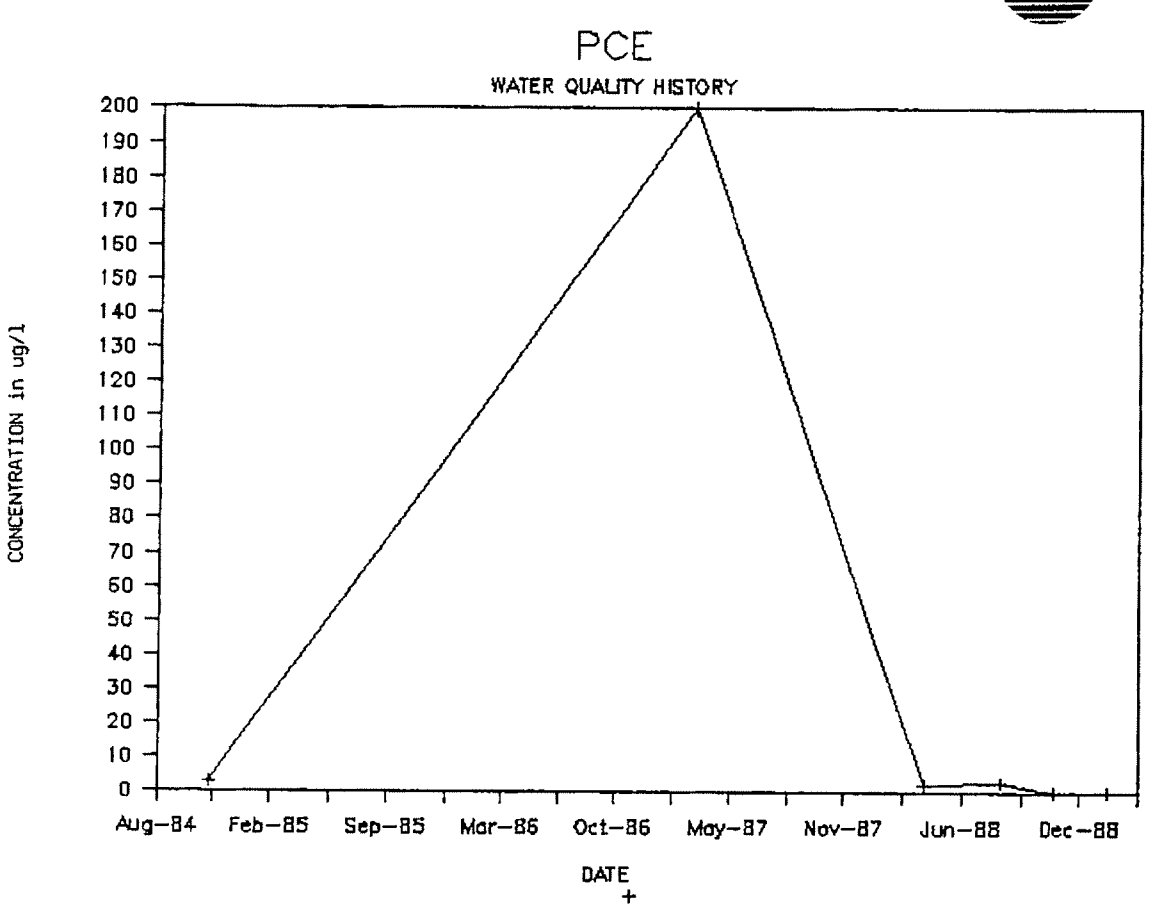
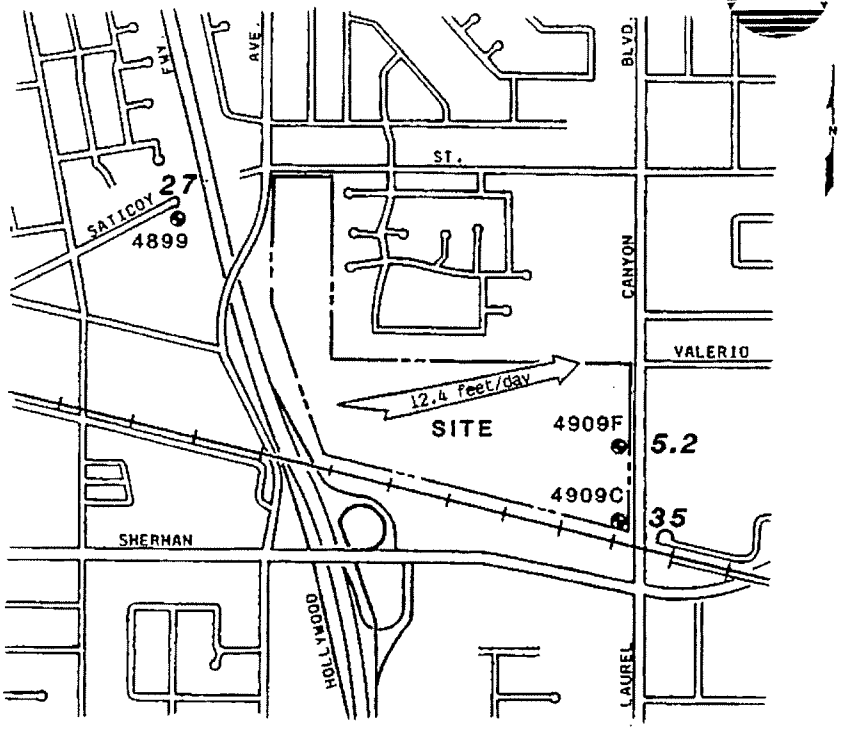


Figure 17

WATER QUALITY HISTORY OF PERCHLOROETHYLENE

This chart shows that a perchloroethylene slug passed the upgradient Monitoring Well 4899 in February 1987.



EXPLANATION

4899 — MONITORING WELL LOCATION AND NUMBER

35 — NITRATE CONCENTRATION IN MILLIGRAMS PER LITER

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

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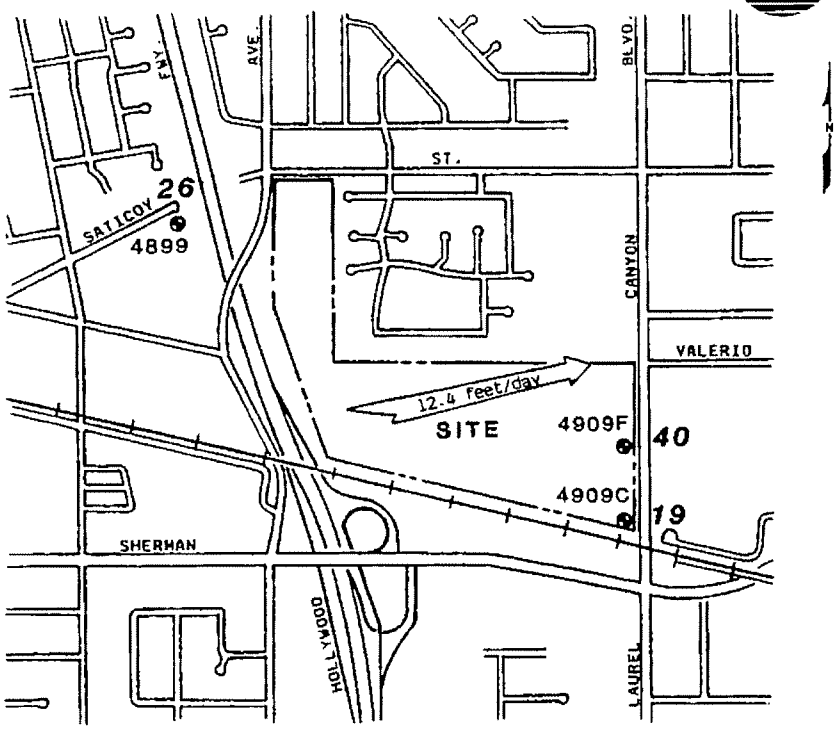
Figure 18

AREAL DISTRIBUTION OF NITRATE IN FEBRUARY 1989

Nitrate is normally found at natural levels less than 10 mg/l in parts of the local aquifer not yet affected by human activity. The sources of nitrate include fertilizer and animal wastes from agriculture development, household septic tank effluent, and natural decaying plant material. Low concentrations of nitrate are often observed downgradient of landfills. This phenomenon may be caused by bacteria in the anoxic conditions below the landfill. The nitrate concentration at Hewitt Landfill varies from 5.2 milligrams (Well 4909F) to 35 milligrams (Well 4909C). The state action level to protect ground water for nitrate is 45 milligrams per liter. The landfill does not appear to be a source of nitrate release.



EXPLANATION

4899 MONITORING WELL LOCATION AND NUMBER

40 CHLORIDE CONCENTRATION IN MILLIGRAMS PER LITER

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

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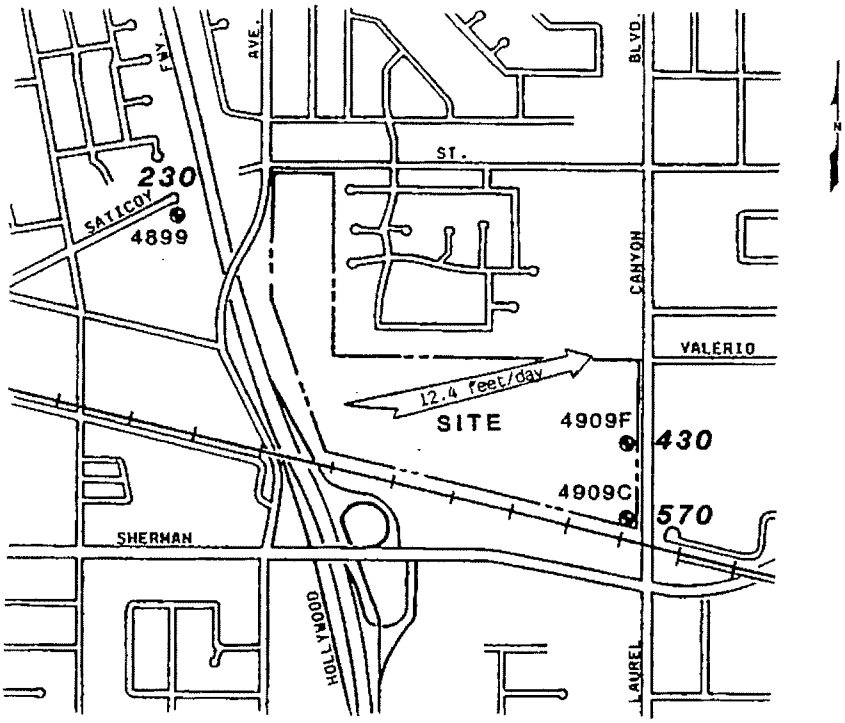
Figure 19

AREAL DISTRIBUTION OF CHLORIDE IN FEBRUARY 1989

Chloride is a sensitive indicator of inorganic water quality and is relatively free of other chemical interference. The range of chloride fluctuation at the landfill is the same for both upgradient monitoring well 4899 and downgradient wells 4909C and 4909F. Well 4909F had the highest chloride measurement during the 1988 SWAT monitoring period. This appears to be related to a general increase in chloride concentration as water levels decline in the underlying aquifer. Hewitt landfill does not appear to be influencing chloride levels; the opposite would be expected if leachate were present.



EXPLANATION

4899 MONITORING WELL LOCATION AND NUMBER

570 BICARBONATE CONCENTRATION IN MILLIGRAMS PER LITER

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

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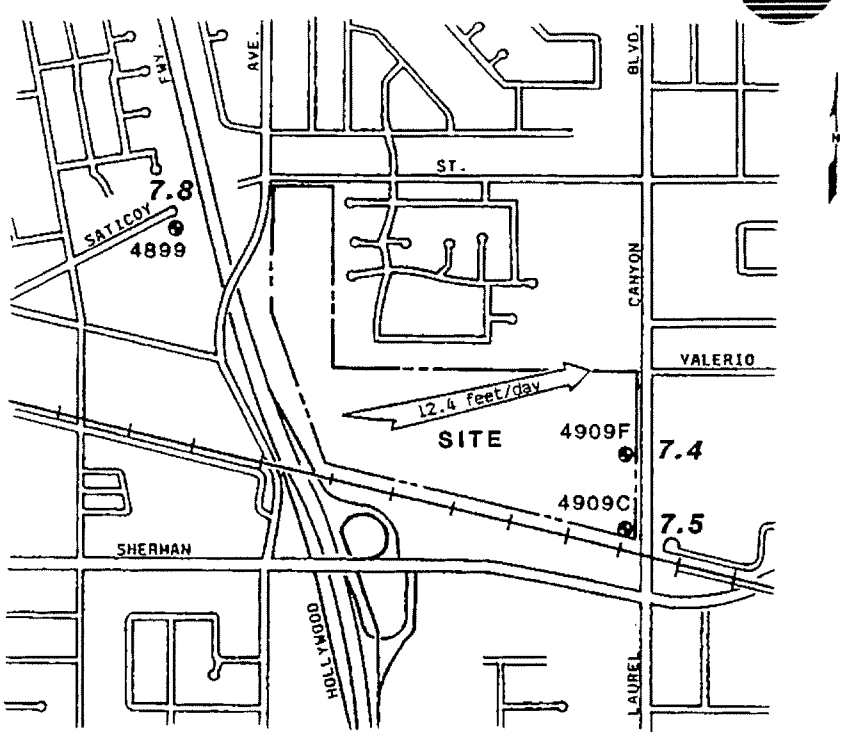
Figure 20

AREAL DISTRIBUTION OF BICARBONATE IN FEBRUARY 1989

Bicarbonate results from reactions between carbon dioxide gas (CO_2) and water. Calcium or magnesium in the aquifer materials act as sources of mineralization. Associated parameters are alkalinity, hardness, pH, TDS, and EC. During the 1988 SWAT monitoring program, upgradient monitoring well 4899 had a 40 mg/l decrease in bicarbonate levels. Downgradient monitoring wells 4909C and 4909F showed an opposite 40 mg/l increase. These variations in water quality appear to be due to landfill gas (CO_2) dissolving in ground water beneath the landfill and releasing calcium, Mg, bicarbonate and alkalinity.



EXPLANATION

4899 MONITORING WELL LOCATION AND NUMBER

7.8 RELATIVE ALKALINITY OR ACIDITY

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

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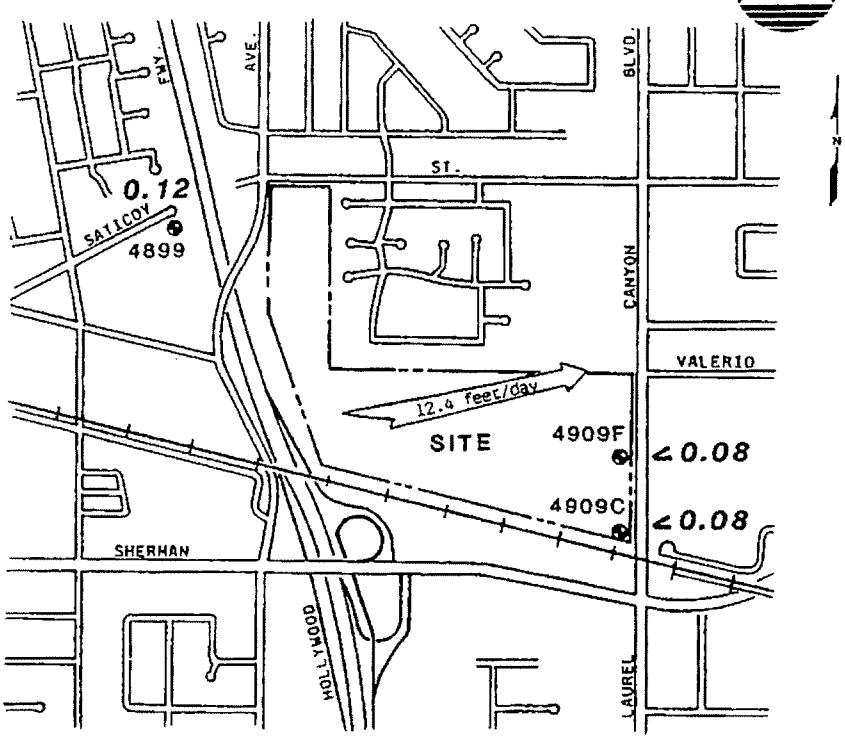
FEET

Figure 21

AREAL DISTRIBUTION OF pH IN FEBRUARY 1989

pH, a relative measure of alkalinity or acidity, is affected by varying carbon dioxide gas (CO_2) concentrations. More CO_2 gas causes a decrease in pH which dissolves minerals out of the aquifer. This in turn causes increases in alkalinity, bicarbonate and calcium. pH reacts much faster than the rate of ground water flow which indicates that the Hewitt Landfill is producing carbon dioxide gas. Over the year long 1988 SWAT period, pH has decreased to 7.4 in downgradient monitoring Wells 4909C and 4909F. Upgradient monitoring Well 4899 has increased in pH to 7.8. At this site, the pH changes 1 point between field and lab measurements. This is probably due to loss of CO_2 during transport and storage.



EXPLANATION

4899 ● MONITORING WELL LOCATION AND NUMBER

0.12 TOTAL ORGANIC HALIDES IN MILLIGRAMS PER LITER

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

0 2000
FEET

Figure 22

AREAL DISTRIBUTION OF TOTAL ORGANIC HALIDES IN FEBRUARY 1989

Total organic halides (TOX) is the total of halogenated (chlorinated) solvents in ground water. The levels are highest in the upgradient monitoring Well 4899 indicating an off-site source in these solvents.

CONCLUSIONS

LEACHATE MIGRATION

Leachate is not known to occur at the site and the landfill does not appear to be releasing hazardous compounds to the ground water. Hewitt Landfill may contain minimal concentrations of hazardous materials, although records of waste received by the site are poor. The trash fill, where intercepted by drilling, is unsaturated and relatively undecomposed (see Appendix C for well logs of leachate test well). The description of materials from the Hewitt leachate well, drilled into trash, includes paper, cardboard, wood chips and demolition debris in a slightly moist, sandy matrix. This dryness can be attributed to the efficiency of the final cover as a barrier to rain water.

GAS MIGRATION

There is no apparent threat to ground water from methane gas migration coming from the Hewitt Landfill. Gas is effectively controlled by the landfill gas collection system installed during the mid-70's. Landfill gas analysis indicate only trace amounts of solvents.

REMEDIAL ACTION

We recommend continued vigilance in adjusting the gas collection system and maintenance of the final cover. Such adjustments to the gas collection system include prevention of off-site migration. Maintenance of the final cover includes proper run-off control to prevent water from ponding on the site, and correction of ponding and cracks as they develop.

In February 1987, sampling of upgradient Monitoring Well 4899 showed high solvent concentrations of TOC (6 ug/l), TCE (45 ug/l) and PCE (200 ug/l) which indicates a migrating solvent plume is passing under the landfill. If the ground water flow regime remains generally the same, the solvent plume should appear in the downgradient monitoring wells around October 1989.

- o0o -

If you have any questions, or if we can clarify anything over the phone, please call Alice Campbell at Law Environmental, Inc. (818) 848-0214.

Yours very truly,

LAW ENVIRONMENTAL, INC.

by Martine Alter
Martine Alter
Staff Geologist

by Alice Campbell
Alice Campbell, C.E.G. 1157
Hydrogeologist

by Glenn A Brown
Glenn A. Brown, C.E.G. 3
Senior Vice President

AC/al/7057SWT.RPT

APPENDIX A

GROUND WATER DATA BASE

AND LABORATORY ANALYSES

BROWN AND CALDWELL LABORATORIES

373 SOUTH FAIR OAKS AVENUE, PASADENA, CA 91105
(818) 795-7553 (213) 681-4655

FAX: (818) 795-8579

ANALYTICAL REPORT

LOG NO: P89-02-187

Received: 10 FEB 89
Reported: 01 MAR 89

Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1				
Chemical Oxygen Demand, mg/L	<5				
Oil and Grease, mg/L	7				
Fluoride, mg/L	0.2				
Total Organic Halides (TOX), mg/L	0.12				
Aluminum, mg/L	<0.2				
Boron, mg/L	0.27				
Silicon, mg/L	10				
Antimony, mg/L	<0.3				
Arsenic, mg/L	0.003				
Barium, mg/L	0.13				
Beryllium, mg/L	<0.001				
Cadmium, mg/L	<0.001				
Chromium, mg/L	<0.008				
Cobalt, mg/L	0.05				
Lead, mg/L	0.002				
Mercury, mg/L	<0.0008				
Molybdenum, mg/L	0.2				
Nickel, mg/L	<0.04				
Selenium, mg/L	<0.004				
Silver, mg/L	<0.01				
Thallium, mg/L	<0.2				
Vanadium, mg/L	<0.03				

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1
B/N,A Ext.Pri.Poll. (EPA-625)	
Date Extracted	02/13/89
Date Analyzed	02/27/89
Dilution Factor, Times 1	1
1,2,4-Trichlorobenzene, ug/L	<10
1,2-Dichlorobenzene, ug/L	<10
1,2-Diphenylhydrazine, ug/L	<10
1,3-Dichlorobenzene, ug/L	<10
1,4-Dichlorobenzene, ug/L	<10
2,4,6-Trichlorophenol, ug/L	<10
2,4-Dichlorophenol, ug/L	<10
2,4-Dimethylphenol, ug/L	<10
2,4-Dinitrotoluene, ug/L	<10
2,4-Dinitrophenol, ug/L	<10
2,6-Dinitrotoluene, ug/L	<10
2-Chloronaphthalene, ug/L	<10
2-Methylnaphthalene, ug/L	<10
2-Methyl Phenol, ug/L	<10
2-Nitrophenol, ug/L	<10
2-Nitroaniline, ug/L	<10
2,4,5-Trichlorophenol, ug/L	<10
2-Chlorophenol, ug/L	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50
3,3'-Dichlorobenzidine, ug/L	<10
3-Nitroaniline, ug/L	<10
4-Bromophenylphenylether, ug/L	<10
4-Chloro-3-methylphenol, ug/L	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1
4-Chlorophenylphenylether, ug/L	<10
4-Chloroaniline, ug/L	<20
4-Methyl Phenol, ug/L	<10
4-Nitrophenol, ug/L	<25
4-Nitroaniline, ug/L	<50
Acenaphthene, ug/L	<50
Acenaphthylene, ug/L	<25
Aniline, ug/L	<20
Anthracene, ug/L	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10
Benzidine, ug/L	<40
Benzoic Acid, ug/L	<50
Benzyl Alcohol, ug/L	<20
Bis(2-chloroethyl) Ether, ug/L	<10
Bis(2-Chloroisopropyl)ether, ug/L	<10
Bis(2-chloroethoxy)methane, ug/L	<10
Benzo(a)anthracene, ug/L	<10
Benzo(a)pyrene, ug/L	<10
Benzo(b)fluoranthene, ug/L	<10
Benzo(g,h,i)perylene, ug/L	<10
Benzo(k)fluoranthene, ug/L	<10
Butylbenzylphthalate, ug/L	<10
Chrysene, ug/L	<10
Di-n-octylphthalate, ug/L	<10
Dibenzo(a,h)anthracene, ug/L	<10
Dibutylphthalate, ug/L	<50
Diethylphthalate, ug/L	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1
Dimethylphthalate, ug/L	<50
Dibenzofuran, ug/L	<25
Fluorene, ug/L	<10
Fluoranthene, ug/L	<10
Hexachlorobenzene, ug/L	<10
Hexachlorobutadiene, ug/L	<10
Hexachlorocyclopentadiene, ug/L	<10
Hexachloroethane, ug/L	<10
Indeno(1,2,3-c,d)Pyrene, ug/L	<10
Isophorone, ug/L	<10
N-Nitrosodi-n-propylamine, ug/L	<40
N-Nitrosodimethylamine, ug/L	<80
N-Nitrosodiphenylamine, ug/L	<10
Naphthalene, ug/L	<10
Nitrobenzene, ug/L	<10
Pentachlorophenol, ug/L	<10
Phenanthrene, ug/L	<10
Phenol, ug/L	<10
Pyrene, ug/L	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1
Vol.Pri.Poll. (EPA-624)	
Date Analyzed	02/18/89
Dilution Factor, Times 1	1
1,1,1-Trichloroethane, ug/L	<1
1,1,2,2-Tetrachloroethane, ug/L	<1
1,1,2-Trichloroethane, ug/L	<1
1,1-Dichloroethane, ug/L	<1
1,1-Dichloroethylene, ug/L	<1
1,2-Dichloroethane, ug/L	<1
1,2-Dichlorobenzene, ug/L	<1
1,2-Dichloropropane, ug/L	<1
1,3-Dichlorobenzene, ug/L	<1
cis-1,3-Dichloropropene, ug/L	<1
1,4-Dichlorobenzene, ug/L	<1
2-Chloroethylvinylether, ug/L	<1
2-Hexanone, ug/L	<1
Acetone, ug/L	<10
Acrolein, ug/L	<10
Acrylonitrile, ug/L	<10
Bromodichloromethane, ug/L	<1
Bromomethane, ug/L	<1
Benzene, ug/L	<1
Chlorobenzene, ug/L	<1
Carbon Tetrachloride, ug/L	<1
Chloroethane, ug/L	<1
Bromoform, ug/L	<1
Chloroform, ug/L	7

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-187-1	4899	10 FEB 89

PARAMETER	02-187-1
Chloromethane, ug/L	<1
Carbon Disulfide, ug/L	<1
Dibromochloromethane, ug/L	<1
Ethylbenzene, ug/L	<1
Freon 113, ug/L	<1
Methyl Isobutyl Ketone, ug/L	<1
Methyl Ethyl Ketone, ug/L	<10
Methylene Chloride, ug/L	<1
Tetrachloroethylene, ug/L	<1
Styrene, ug/L	<1
Trichloroethylene, ug/L	<1
Trichlorofluoromethane, ug/L	<1
Toluene, ug/L	<1
Vinyl Acetate, ug/L	<10
Vinyl Chloride, ug/L	<1
Total Xylene Isomers, ug/L	<10
trans-1,2-Dichloroethylene, ug/L	<1
trans-1,3-Dichloropropene, ug/L	<1

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 89-02-187-1
Sample Description: 4899

General Mineral Analysis
Sampled Date 10 FEB 89

Anions	mg/L	meq/L
Nitrate (as NO3)	27	0.44
Chloride	26	0.73
Sulfate	42	0.87
Bicarbonate (as HCO3)	230	3.8
Carbonate (as CO3)	<6	<0.2
Total Milliequivalents per Liter		6.0

Cations	mg/L	meq/L
Sodium	28	1.2
Potassium	2.5	0.064
Calcium (EDTA Titration)	83	4.1
Magnesium	11	0.9
Total Milliequivalents per Liter		6.3

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<10
Bicarbonate Alk (as CaCO3	190
Ca Hardness (as CaCO3)	210
Mg Hardness (as CaCO3)	45
Total Hardness (as CaCO3)	255
Iron	0.12
Manganese	<0.005
Copper	<0.02
Zinc	<0.03
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	370
Sp. Conductance, umhos/cm	590
pH, units	7.8

* Conforms to Title 22, California Administrative Code

Jane E Freeman for —
Jeffrey A. Erion, Laboratory Manager

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P89-02-095

Received: 06 FEB 89
Reported: 17 FEB 89

Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-095-1	4909C	06 FEB 89
02-095-2	4909F	06 FEB 89

PARAMETER	02-095-1	02-095-2
Chemical Oxygen Demand, mg/L	<15	<15
Oil and Grease, mg/L	<5	16
Fluoride, mg/L	0.3	0.2
Total Organic Halides (TOX), mg/L	<0.08	<0.08
Aluminum, mg/L	<0.2	<0.2
Boron, mg/L	0.34	0.43
Silicon, mg/L	11	10
Antimony, mg/L	35	43
Arsenic, mg/L	<0.002	<0.002
Barium, mg/L	0.29	0.24
Beryllium, mg/L	<0.001	<0.001
Cadmium, mg/L	0.004	0.003
Chromium, mg/L	<0.008	<0.008
Cobalt, mg/L	<0.04	<0.04
Lead, mg/L	<0.002	<0.002
Mercury, mg/L	<0.0008	<0.0008
Molybdenum, mg/L	<0.2	<0.2
Nickel, mg/L	<0.04	<0.04
Selenium, mg/L	<0.004	<0.004
Silver, mg/L	<0.01	<0.01
Thallium, mg/L	<0.2	<0.2
Vanadium, mg/L	<0.03	<0.03

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02-095-1	4909C	06 FEB 89
02-095-2	4909F	06 FEB 89

PARAMETER	02-095-1	02-095-2
4-Chloro-3-methylphenol, ug/L	<10	<10
4-Chlorophenylphenylether, ug/L	<10	<10
4-Chloroaniline, ug/L	<20	<20
4-Methyl Phenol, ug/L	<10	<10
4-Nitrophenol, ug/L	<25	<25
4-Nitroaniline, ug/L	<50	<50
Acenaphthene, ug/L	<10	<10
Acenaphthylene, ug/L	<10	<10
Aniline, ug/L	<20	<20
Anthracene, ug/L	<10	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10	<10
Benzidine, ug/L	<40	<40
Benzoic Acid, ug/L	<50	<50
Benzyl Alcohol, ug/L	<20	<20
Bis(2-chloroethyl) Ether, ug/L	<10	<10
Bis(2-Chloroisopropyl)ether, ug/L	<10	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<10
Benzo(a)anthracene, ug/L	<10	<10
Benzo(a)pyrene, ug/L	<10	<10
Benzo(b)fluoranthene, ug/L	<10	<10
Benzo(g,h,i)perylene, ug/L	<10	<10
Benzo(k)fluoranthene, ug/L	<10	<10
Butylbenzylphthalate, ug/L	<10	<10
Chrysene, ug/L	<10	<10
Di-n-octylphthalate, ug/L	<10	<10
Dibenzo(a,h)anthracene, ug/L	<10	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-095-1	4909C	06 FEB 89
02-095-2	4909F	06 FEB 89

PARAMETER	02-095-1	02-095-2
Dibutylphthalate, ug/L	<50	<50
Diethylphthalate, ug/L	<10	<10
Dimethylphthalate, ug/L	<25	<25
Dibenzofuran, ug/L	<10	<10
Fluorene, ug/L	<10	<10
Fluoranthene, ug/L	<10	<10
Hexachlorobenzene, ug/L	<10	<10
Hexachlorobutadiene, ug/L	<10	<10
Hexachlorocyclopentadiene, ug/L	<10	<10
Hexachloroethane, ug/L	<10	<10
Indeno(1,2,3-c,d)Pyrene, ug/L	<10	<10
Isophorone, ug/L	<10	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<40
N-Nitrosodimethylamine, ug/L	<80	<80
N-Nitrosodiphenylamine, ug/L	<10	<10
Naphthalene, ug/L	<10	<10
Nitrobenzene, ug/L	<10	<10
Pentachlorophenol, ug/L	<10	<10
Phenanthrene, ug/L	<10	<10
Phenol, ug/L	<10	<10
Pyrene, ug/L	<10	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
02-095-1	4909C	06 FEB 89
02-095-2	4909F	06 FEB 89

PARAMETER	02-095-1	02-095-2
Vol.Pri.Poll. (EPA-624)		
Date Analyzed	02/08/89	02/08/89
Dilution Factor, Times 1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1
1,1-Dichloroethane, ug/L	<1	<1
1,1-Dichloroethylene, ug/L	<1	<1
1,2-Dichloroethane, ug/L	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1
1,2-Dichloropropane, ug/L	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1
2-Hexanone, ug/L	<1	<1
Acetone, ug/L	<10	<10
Acrolein, ug/L	<10	<10
Acrylonitrile, ug/L	<10	<10
Bromodichloromethane, ug/L	<1	<1
Bromomethane, ug/L	<1	<1
Benzene, ug/L	<1	<1
Chlorobenzene, ug/L	<1	<1
Carbon Tetrachloride, ug/L	<1	<1
Chloroethane, ug/L	<1	<1
Bromoform, ug/L	<1	<1

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02-095-1	4909C	06 FEB 89
02-095-2	4909F	06 FEB 89

PARAMETER	02-095-1	02-095-2
Chloroform, ug/L	<1	1
Chloromethane, ug/L	<1	<1
Carbon Disulfide, ug/L	<1	<1
Dibromochloromethane, ug/L	<1	<1
Ethylbenzene, ug/L	<1	<1
Freon 113, ug/L	<1	<1
Methyl Isobutyl Ketone, ug/L	<1	<1
Methyl Ethyl Ketone, ug/L	<10	<10
Methylene Chloride, ug/L	<1	<1
Tetrachloroethylene, ug/L	<1	2
Styrene, ug/L	<1	<1
Trichloroethylene, ug/L	<1	1
Trichlorofluoromethane, ug/L	<1	<1
Toluene, ug/L	<1	<1
Vinyl Acetate, ug/L	<10	<10
Vinyl Chloride, ug/L	<1	<1
Total Xylene Isomers, ug/L	<10	<10
trans-1,2-Dichloroethylene, ug/L	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1
Other Vol.Pri.Poll. (EPA-624)	---	---

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P89-02-095

Received: 06 FEB 89
Reported: 17 FEB 89

Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 89-02-095-1
Sample Description: 4909C

General Mineral Analysis
Sampled Date 06 FEB 89

Anions	mg/L	meq/L
Nitrate (as NO3)	5.2	0.084
Chloride	19	0.54
Sulfate	29	0.6
Bicarbonate (as HCO3)	570	9.4
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		10.6

Cations	mg/L	meq/L
Sodium	38	1.7
Potassium	4.4	0.11
Calcium (EDTA Titration)	130	6.5
Magnesium	27	2.2
Total Milliequivalents per Liter		10.5

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarbonate Alk (as CaCO3	470
Ca Hardness (as CaCO3)	320
Mg Hardness (as CaCO3)	110
Total Hardness (as CaCO3)	430
Iron	2.0
Manganese	0.008
Copper	<0.02
Zinc	0.09
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	550
Sp. Conductance, umhos/cm	950
pH, units	7.5

* Conforms to Title 22, California Administrative Code

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ANALYTICAL REPORT

LOG NO: P89-02-095

Received: 06 FEB 89
Reported: 17 FEB 89

Alice Campbell
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Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 89-02-095-2
Sample Description: 4909F

General Mineral Analysis
Sampled Date 06 FEB 89

Anions	mg/L	meq/L
Nitrate (as NO3)	35	0.56
Chloride	40	1.1
Sulfate	70	1.5
Bicarbonate (as HCO3)	430	7
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		10.2

Cations	mg/L	meq/L
Sodium	52	2.3
Potassium	5.0	0.13
Calcium (EDTA Titration)	130	6.5
Magnesium	23	1.9
Total Milliequivalents per Liter		10.8

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarbonate Alk (as CaCO3	350
Ca Hardness (as CaCO3)	320
Mg Hardness (as CaCO3)	95
Total Hardness (as CaCO3)	415
Iron	0.46
Manganese	<0.005
Copper	<0.02
Zinc	0.10
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	620
Sp. Conductance, umhos/cm	1000
pH, units	7.4

* Conforms to Title 22, California Administrative Code

Jeffrey A. Erion, Laboratory Manager

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ANALYTICAL REPORT

LOG NO: P88-11-140

Received: 09 NOV 88
Reported: 29 NOV 88

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
Chemical Oxygen Demand, mg/L	<3	6
Oil and Grease, mg/L	9	<5
Fluoride, mg/L	0.2	0.2
Total Organic Halides (TOX), mg/L	<0.08	<0.08
Aluminum, mg/L	<0.2	<0.2
Boron, mg/L	0.27	0.37
Antimony, mg/L	<0.3	<0.3
Arsenic, mg/L	<0.002	<0.002
Barium, mg/L	0.16	0.28
Beryllium, mg/L	<0.001	<0.001
Cadmium, mg/L	<0.001	<0.001
Chromium, mg/L	<0.04	<0.04
Cobalt, mg/L	<0.04	<0.04
Lead, mg/L	<0.002	<0.002
Mercury, mg/L	<0.0008	<0.0008
Molybdenum, mg/L	<0.2	<0.2
Nickel, mg/L	<0.04	<0.04
Selenium, mg/L	<0.004	<0.004
Silver, mg/L	<0.02	<0.02
Thallium, mg/L	<0.2	<0.2
Vanadium, mg/L	<0.03	<0.03

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
B/N,A Ext.Pri.Poll. (EPA-625)		
Date Extracted	11/15/88	11/15/88
Date Analyzed	11/18/88	11/18/88
Dilution Factor, Times 1	1	1
1,2,4-Trichlorobenzene, ug/L	<10	<10
1,2-Dichlorobenzene, ug/L	<10	<10
1,2-Diphenylhydrazine, ug/L	<10	<10
1,3-Dichlorobenzene, ug/L	<10	<10
1,4-Dichlorobenzene, ug/L	<10	<10
2,4,6-Trichlorophenol, ug/L	<10	<10
2,4-Dichlorophenol, ug/L	<10	<10
2,4-Dimethylphenol, ug/L	<10	<10
2,4-Dinitrotoluene, ug/L	<10	<10
2,4-Dinitrophenol, ug/L	<25	<25
2,6-Dinitrotoluene, ug/L	<10	<10
2-Chloronaphthalene, ug/L	<10	<10
2-Methylnaphthalene, ug/L	<10	<10
2-Methyl Phenol, ug/L	<10	<10
2-Nitrophenol, ug/L	<10	<10
2-Nitroaniline, ug/L	<50	<50
2,4,5-Trichlorophenol, ug/L	<10	<10
2-Chlorophenol, ug/L	<10	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50	<50
3,3'-Dichlorobenzidine, ug/L	<10	<10

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
3-Nitroaniline, ug/L	<50	<50
4-Bromophenylphenylether, ug/L	<10	<10
4-Chloro-3-methylphenol, ug/L	<10	<10
4-Chlorophenylphenylether, ug/L	<10	<10
4-Chloroaniline, ug/L	<20	<20
4-Methyl Phenol, ug/L	<10	<10
4-Nitrophenol, ug/L	<25	<25
4-Nitroaniline, ug/L	<50	<50
Acenaphthene, ug/L	<10	<10
Acenaphthylene, ug/L	<10	<10
Aniline, ug/L	<20	<20
Anthracene, ug/L	<10	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10	<10
Benzidine, ug/L	<40	<40
Benzoic Acid, ug/L	<50	<50
Benzyl Alcohol, ug/L	<20	<20
Bis(2-chloroethyl) Ether, ug/L	<10	<10
Bis(2-Chloroisopropyl)ether, ug/L	<10	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<10
Benzo(a)anthracene, ug/L	<10	<10
Benzo(a)pyrene, ug/L	<10	<10
Benzo(b)fluoranthene, ug/L	<10	<10
Benzo(g,h,i)perylene, ug/L	<10	<10
Benzo(k)fluoranthene, ug/L	<10	<10

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
Butylbenzylphthalate, ug/L	<10	<10
Chrysene, ug/L	<10	<10
Di-n-octylphthalate, ug/L	<10	<10
Dibenzo(a,h)anthracene, ug/L	<10	<10
Dibutylphthalate, ug/L	<50	<50
Diethylphthalate, ug/L	<10	<10
Dimethylphthalate, ug/L	<25	<25
Dibenzofuran, ug/L	<10	<10
Fluorene, ug/L	<10	<10
Fluoranthene, ug/L	<10	<10
Hexachlorobenzene, ug/L	<10	<10
Hexachlorobutadiene, ug/L	<10	<10
Hexachlorocyclopentadiene, ug/L	<10	<10
Hexachloroethane, ug/L	<10	<10
Indeno(1,2,3-c,d)Pyrene, ug/L	<10	<10
Isophorone, ug/L	<10	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<40
N-Nitrosodimethylamine, ug/L	<80	<80
N-Nitrosodiphenylamine, ug/L	<10	<10
Naphthalene, ug/L	<10	<10
Nitrobenzene, ug/L	<10	<10
Pentachlorophenol, ug/L	<10	<10
Phenanthrene, ug/L	<10	<10
Phenol, ug/L	<10	<10

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
Pyrene, ug/L	<10	<10

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ANALYTICAL REPORT

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
Vol.Pri.Poll. (EPA-624)		
Date Analyzed	11/21/88	11/21/88
Dilution Factor, Times 1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1
1,1-Dichloroethane, ug/L	<1	<1
1,1-Dichloroethylene, ug/L	<1	<1
1,2-Dichloroethane, ug/L	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1
1,2-Dichloropropane, ug/L	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1
2-Hexanone, ug/L	<1	<1
Acetone, ug/L	<10	<10
Acrolein, ug/L	<10	<10
Acrylonitrile, ug/L	<10	<10
Bromodichloromethane, ug/L	<1	<1
Bromomethane, ug/L	<1	<1
Benzene, ug/L	<1	<1
Chlorobenzene, ug/L	<1	<1
Carbon Tetrachloride, ug/L	<1	<1

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ANALYTICAL REPORT

LOG NO: P88-11-140

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Reported: 29 NOV 88

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-140-1	4899	09 NOV 88
11-140-2	4909C	09 NOV 88

PARAMETER	11-140-1	11-140-2
Chloroethane, ug/L	<1	<1
Bromoform, ug/L	<1	<1
Chloroform, ug/L	5	<1
Chloromethane, ug/L	<1	<1
Carbon Disulfide, ug/L	<1	<1
Dibromochloromethane, ug/L	<1	<1
Ethylbenzene, ug/L	<1	<1
Freon 113, ug/L	<1	<1
Methyl Isobutyl Ketone, ug/L	<1	<1
Methyl Ethyl Ketone, ug/L	<10	<10
Methylene Chloride, ug/L	<1	<1
Tetrachloroethylene, ug/L	<1	<1
Styrene, ug/L	<1	<1
Trichloroethylene, ug/L	<1	<1
Trichlorofluoromethane, ug/L	<1	<1
Toluene, ug/L	<1	<1
Vinyl Acetate, ug/L	<10	<10
Vinyl Chloride, ug/L	<1	<1
Total Xylene Isomers, ug/L	<10	<10
trans-1,2-Dichloroethylene, ug/L	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1

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ANALYTICAL REPORT

LOG NO: P88-11-140

Received: 09 NOV 88
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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-11-140-1
Sample Description: 4899

General Mineral Analysis
Sampled Date 09 NOV 88

Anions	mg/L	meq/L
Nitrate (as NO3)	30	0.48
Chloride	27	0.76
Sulfate	52	1.1
Bicarbonate (as HCO3)	290	4.8
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		7.2

Cations	mg/L	meq/L
Sodium	36	1.6
Potassium	4.0	0.1
Calcium (EDTA Titration)	92	4.6
Magnesium	16	1.3
Total Milliequivalents per Liter		7.6

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarbonate Alk (as CaCO3	240
Ca Hardness (as CaCO3)	230
Mg Hardness (as CaCO3)	66
Total Hardness (as CaCO3)	296
Iron	0.15
Manganese	<0.005
Copper	<0.02
Zinc	<0.03
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	420
Sp. Conductance, umhos/cm	680
pH, units	7.8

* Conforms to Title 22, California Administrative Code

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ANALYTICAL REPORT

LOG NO: P88-11-140

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-11-140-2
Sample Description: 4909C

General Mineral Analysis
Sampled Date 09 NOV 88

Anions	mg/L	meq/L
Nitrate (as NO3)	2.3	0.037
Chloride	19	0.54
Sulfate	29	0.6
Bicarbonate (as HCO3)	570	9.4
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		10.6
Cations	**mg/L**	**meq/L**
Sodium	46	2
Potassium	5.3	0.14
Calcium (EDTA Titration)	130	6.5
Magnesium	31	2.6
Total Milliequivalents per Liter		11.2

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarbonate Alk (as CaCO3	470
Ca Hardness (as CaCO3)	320
Mg Hardness (as CaCO3)	130
Total Hardness (as CaCO3)	450
Iron	0.16
Manganese	<0.005
Copper	<0.02
Zinc	<0.03
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	540
Sp. Conductance, umhos/cm	950
pH, units	7.3

* Conforms to Title 22, California Administrative Code

Jeffrey A. Erjon, Laboratory Manager

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LOG NO: P88-11-232

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
Chemical Oxygen Demand, mg/L	20
Oil and Grease, mg/L	<5
Fluoride, mg/L	0.2
Total Organic Halides (TOX), mg/L	<0.08
Aluminum, mg/L	<0.2
Boron, mg/L	0.32
Silicon, mg/L	11
Antimony, mg/L	0.4
Arsenic, mg/L	<0.002
Barium, mg/L	0.24
Beryllium, mg/L	0.001
Cadmium, mg/L	<0.001
Chromium, mg/L	<0.04
Cobalt, mg/L	<0.04
Lead, mg/L	<0.002
Mercury, mg/L	<0.0008
Molybdenum, mg/L	<0.2
Nickel, mg/L	<0.04
Selenium, mg/L	<0.004
Silver, mg/L	<0.02
Thallium, mg/L	<0.2
Vanadium, mg/L	<0.03

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LOG NO: P88-11-232

Received: 15 NOV 88
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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
B/N,A Ext.Pri.Poll. (EPA-625)	
Date Extracted	11/21/88
Date Analyzed	11/29/88
Dilution Factor, Times 1	1
1,2,4-Trichlorobenzene, ug/L	<10
1,2-Dichlorobenzene, ug/L	<10
1,2-Diphenylhydrazine, ug/L	<10
1,3-Dichlorobenzene, ug/L	<10
1,4-Dichlorobenzene, ug/L	<10
2,4,6-Trichlorophenol, ug/L	<10
2,4-Dichlorophenol, ug/L	<10
2,4-Dimethylphenol, ug/L	<10
2,4-Dinitrotoluene, ug/L	<10
2,4-Dinitrophenol, ug/L	<25
2,6-Dinitrotoluene, ug/L	<10
2-Chloronaphthalene, ug/L	<10
2-Methylnaphthalene, ug/L	<10
2-Methyl Phenol, ug/L	<10
2-Nitrophenol, ug/L	<10
2-Nitroaniline, ug/L	<50
2,4,5-Trichlorophenol, ug/L	<10
2-Chlorophenol, ug/L	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50
3,3'-Dichlorobenzidine, ug/L	<10
3-Nitroaniline, ug/L	<50

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LOG NO: P88-11-232

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
4-Bromophenylphenylether, ug/L	<10
4-Chloro-3-methylphenol, ug/L	<10
4-Chlorophenylphenylether, ug/L	<10
4-Chloroaniline, ug/L	<20
4-Methyl Phenol, ug/L	<10
4-Nitrophenol, ug/L	<25
4-Nitroaniline, ug/L	<50
Acenaphthene, ug/L	<10
Aniline, ug/L	<20
Anthracene, ug/L	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10
Benzidine, ug/L	<40
Benzoic Acid, ug/L	<50
Benzyl Alcohol, ug/L	<20
Bis(2-chloroethyl) Ether, ug/L	<10
Bis(2-Chloroisopropyl)ether, ug/L	<10
Bis(2-chloroethoxy)methane, ug/L	<10
Benzo(a)anthracene, ug/L	<10
Benzo(a)pyrene, ug/L	<10
Benzo(b)fluoranthene, ug/L	<10
Benzo(g,h,i)perylene, ug/L	<10
Benzo(k)fluoranthene, ug/L	<10
Butylbenzylphthalate, ug/L	<10
Chrysene, ug/L	<10
Di-n-octylphthalate, ug/L	<10

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LOG NO: P88-11-232

Received: 15 NOV 88
Reported: 06 DEC 88

Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
Dibenzo(a,h)anthracene, ug/L	<10
Dibutylphthalate, ug/L	<50
Diethylphthalate, ug/L	<10
Dimethylphthalate, ug/L	<25
Dibenzofuran, ug/L	<10
Fluorene, ug/L	<10
Fluoranthene, ug/L	<10
Hexachlorobenzene, ug/L	<10
Hexachlorobutadiene, ug/L	<10
Hexachlorocyclopentadiene, ug/L	<10
Hexachloroethane, ug/L	<10
Indeno(1,2,3-c,d)Pyrene, ug/L	<10
Isophorone, ug/L	<10
N-Nitrosodi-n-propylamine, ug/L	<40
N-Nitrosodimethylamine, ug/L	<80
N-Nitrosodiphenylamine, ug/L	<10
Naphthalene, ug/L	<10
Nitrobenzene, ug/L	<10
Pentachlorophenol, ug/L	<10
Phenanthrene, ug/L	<10
Phenol, ug/L	<10
Pyrene, ug/L	<10
Other B/N,A Ext.Pri.Poll. (EPA-625)	---

Semi-Quantified Results **

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
Acenaphthylene, ug/L	<10

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard.

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
Vol.Pri.Poll. (EPA-624)	
Date Analyzed	11/23/88
Dilution Factor, Times 1	1
1,1,1-Trichloroethane, ug/L	<1
1,1,2,2-Tetrachloroethane, ug/L	<1
1,1,2-Trichloroethane, ug/L	<1
1,1-Dichloroethane, ug/L	<1
1,1-Dichloroethylene, ug/L	<1
1,2-Dichloroethane, ug/L	<1
1,2-Dichlorobenzene, ug/L	<1
1,2-Dichloropropane, ug/L	<1
1,3-Dichlorobenzene, ug/L	<1
cis-1,3-Dichloropropene, ug/L	<1
1,4-Dichlorobenzene, ug/L	<1
2-Chloroethylvinylether, ug/L	<1
2-Hexanone, ug/L	<1
Acetone, ug/L	<10
Acrolein, ug/L	<10
Acrylonitrile, ug/L	<10
Bromodichloromethane, ug/L	<1
Bromomethane, ug/L	<1
Benzene, ug/L	<1
Chlorobenzene, ug/L	<1
Carbon Tetrachloride, ug/L	<1
Chloroethane, ug/L	<1

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-232-1	4909F	15 NOV 88

PARAMETER	11-232-1
Bromoform, ug/L	<1
Chloroform, ug/L	<1
Chloromethane, ug/L	<1
Carbon Disulfide, ug/L	<1
Dibromochloromethane, ug/L	<1
Ethylbenzene, ug/L	<1
Freon 113, ug/L	<1
Methyl Isobutyl Ketone, ug/L	<1
Methyl Ethyl Ketone, ug/L	<10
Methylene Chloride, ug/L	<1
Tetrachloroethylene, ug/L	1
Styrene, ug/L	<1
Trichloroethylene, ug/L	<1
Trichlorofluoromethane, ug/L	<1
Toluene, ug/L	<1
Vinyl Acetate, ug/L	<10
Vinyl Chloride, ug/L	<1
Total Xylene Isomers, ug/L	<10
trans-1,2-Dichloroethylene, ug/L	<1
trans-1,3-Dichloropropene, ug/L	<1

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LOG NO: P88-11-232

Received: 15 NOV 88
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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-11-232-1
Sample Description: 4909F

General Mineral Analysis
Sampled Date 15 NOV 88

Anions	mg/L	meq/L
Nitrate (as NO3)	67	1.1
Chloride	39	1.1
Sulfate	70	1.5
Bicarbonate (as HCO3)	410	6.8
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		10.5

Cations	mg/L	meq/L
Sodium	58	2.5
Potassium	6.2	0.16
Calcium (EDTA Titration)	140	7
Magnesium	26	2.1
Total Milliequivalents per Liter		11.8

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarbonate Alk (as CaCO3	340
Ca Hardness (as CaCO3)	350
Mg Hardness (as CaCO3)	110
Total Hardness (as CaCO3)	460
Iron	<0.02
Manganese	<0.005
Copper	<0.02
Zinc	0.08
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	630
Sp. Conductance, umhos/cm	1000
pH, units	7.8

* Conforms to Title 22, California Administrative Code

Jeffrey A. Erion, Laboratory Manager

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P88-08-222

Received: 10 AUG 88
Reported: 08 SEP 88

Alice Campbell
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3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
Nitrate (as NO3), mg/L	0.8	73	21
Chemical Oxygen Demand, mg/L	<3	<3	<3
Non-filterable Residue (TSS), mg/L	<5	10	10
Oil and Grease, mg/L	<5	<5	<5
Volatile Suspended Solids, mg/L	6	5	<5
Fluoride, mg/L	0.2	0.2	0.2
Total Organic Halides (TOX), mg/L	<0.08	<0.08	<0.08
Aluminum, mg/L	<0.2	<0.2	<0.2
Boron, mg/L	0.48	0.34	0.26
Antimony, mg/L	<0.3	<0.3	<0.3
Arsenic, mg/L	<0.002	<0.002	<0.002
Barium, mg/L	0.27	0.21	0.13
Beryllium, mg/L	<0.001	<0.001	<0.001
Cadmium, mg/L	<0.001	<0.001	<0.001
Chromium, mg/L	<0.04	<0.04	<0.04
Cobalt, mg/L	0.04	<0.04	<0.04
Lead, mg/L	<0.002	<0.002	<0.002
Mercury, mg/L	0.0010	<0.0008	<0.0008
Molybdenum, mg/L	<0.2	<0.2	0.2
Nickel, mg/L	<0.04	<0.04	<0.04
Selenium, mg/L	<0.001	0.001	<0.001
Silver, mg/L	<0.2	<0.2	<0.2
Thallium, mg/L	<0.2	<0.2	<0.2
Vanadium, mg/L	<0.03	<0.03	<0.03

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
B/N,A Ext.Pri.Poll. (EPA-625)			
Date Extracted	08/11/88	08.19.88	08/11/88
Date Analyzed	08/18/88	08.27.88	08/19/88
Dilution Factor, Times 1	1	1	1
1,2,4-Trichlorobenzene, ug/L	<10	<1	<10
1,2-Dichlorobenzene, ug/L	<10	<1	<10
1,2-Diphenylhydrazine, ug/L	<10	<1	<10
1,3-Dichlorobenzene, ug/L	<10	<1	<10
1,4-Dichlorobenzene, ug/L	<10	<1	<10
2,4,6-Trichlorophenol, ug/L	<10	<1	<10
2,4-Dichlorophenol, ug/L	<10	<1	<10
2,4-Dimethylphenol, ug/L	<10	<1	<10
2,4-Dinitrotoluene, ug/L	<10	<1	<10
2,4-Dinitrophenol, ug/L	<25	<10	<25
2,6-Dinitrotoluene, ug/L	<10	<1	<10
2-Chloronaphthalene, ug/L	<10	<1	<10
2-Methylnaphthalene, ug/L	<10	<1	<10
2-Methyl Phenol, ug/L	<10	<1	<10
2-Nitrophenol, ug/L	<10	<1	<10
2-Nitroaniline, ug/L	<50	<5	<50
2,4,5-Trichlorophenol, ug/L	<10	<5	<10
2-Chlorophenol, ug/L	<10	<1	<10
2-Methyl-4,6-dinitrophenol, ug/L	<50	<1	<50
3,3'-Dichlorobenzidine, ug/L	<10	<1	<10
3-Nitroaniline, ug/L	<50	<5	<50

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
4-Bromophenylphenylether, ug/L	<10	<1	<10
4-Chloro-3-methylphenol, ug/L	<10	<1	<10
4-Chlorophenylphenylether, ug/L	<10	<1	<10
4-Chloroaniline, ug/L	<20	<5	<20
4-Methyl Phenol, ug/L	<10	<1	<10
4-Nitrophenol, ug/L	<25	<20	<25
4-Nitroaniline, ug/L	<50	<5	<50
Acenaphthene, ug/L	<10	<1	<10
Acenaphthylene, ug/L	<10	<1	<10
Aniline, ug/L	<20	<1	<20
Anthracene, ug/L	<10	<1	<10
Bis(2-ethylhexyl)phthalate, ug/L	<10	<100	<10
Benzidine, ug/L	<40	<40	<40
Benzoic Acid, ug/L	<50	<5	<50
Benzyl Alcohol, ug/L	<20	<5	<20
Bis(2-chloroethyl) Ether, ug/L	<10	<1	<10
Bis(2-Chloroisopropyl)ether, ug/L	<10	<1	<10
Bis(2-chloroethoxy)methane, ug/L	<10	<1	<10
Benzo(a)anthracene, ug/L	<10	<1	<10
Benzo(a)pyrene, ug/L	<10	<1	<10
Benzo(b)fluoranthene, ug/L	<10	<1	<10
Benzo(g,h,i)perylene, ug/L	<10	<1	<10
Benzo(k)fluoranthene, ug/L	<10	<1	<10
Butylbenzylphthalate, ug/L	<10	<1	<10
Chrysene, ug/L	<10	<1	<10

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
Di-n-octylphthalate, ug/L	<10	<1	<10
Dibenzo(a,h)anthracene, ug/L	<10	<1	<10
Dibutylphthalate, ug/L	<50	<1	<50
Diethylphthalate, ug/L	<10	<1	<10
Dimethylphthalate, ug/L	<25	<1	<25
Dibenzofuran, ug/L	<10	<1	<10
Fluorene, ug/L	<10	<1	<10
Fluoranthene, ug/L	<10	<1	<10
Hexachlorobenzene, ug/L	<10	<1	<10
Hexachlorobutadiene, ug/L	<10	<1	<10
Hexachlorocyclopentadiene, ug/L	<10	<1	<10
Hexachloroethane, ug/L	<10	<1	<10
Indeno(1,2,3-c,d)Pyrene, ug/L	<10	<1	<10
Isophorone, ug/L	<10	<1	<10
N-Nitrosodi-n-propylamine, ug/L	<40	<1	<40
N-Nitrosodimethylamine, ug/L	<80	<1	<80
N-Nitrosodiphenylamine, ug/L	<10	<1	<10
Naphthalene, ug/L	<10	<1	<10
Nitrobenzene, ug/L	<10	<1	<10
Pentachlorophenol, ug/L	<10	<1	<10
Phenanthrene, ug/L	<10	<1	<10
Phenol, ug/L	<10	<1	<10
Pyrene, ug/L	<10	<1	<10

BROWN AND CALDWELL LABORATORIES

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
Vol.Pri.Poll. (EPA-624)			
Date Analyzed	08/23/88	08/23/88	08/23/88
Dilution Factor, Times 1	1	1	1
1,1,1-Trichloroethane, ug/L	<1	<1	<1
1,1,2,2-Tetrachloroethane, ug/L	<1	<1	<1
1,1,2-Trichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethane, ug/L	<1	<1	<1
1,1-Dichloroethylene, ug/L	<1	<1	<1
1,2-Dichloroethane, ug/L (1,2 DCA)	<1	<1	<1
1,2-Dichlorobenzene, ug/L	<1	<1	<1
1,2-Dichloropropane, ug/L	<1	<1	<1
1,3-Dichlorobenzene, ug/L	<1	<1	<1
cis-1,3-Dichloropropene, ug/L	<1	<1	<1
1,4-Dichlorobenzene, ug/L	<1	<1	<1
2-Chloroethylvinylether, ug/L	<1	<1	<1
2-Hexanone, ug/L	<1	<1	<1
Acetone, ug/L	<10	<10	<10
Acrolein, ug/L	<10	<10	<10
Acrylonitrile, ug/L	<10	<10	<10
Bromodichloromethane, ug/L	<1	<1	<1
Bromomethane, ug/L	<1	<1	<1
Benzene, ug/L	<1	<1	<1
Chlorobenzene, ug/L	<1	<1	<1
Carbon Tetrachloride, ug/L	<1	<1	<1
Chloroethane, ug/L	<1	<1	<1

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REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
08-222-1	4909 C	10 AUG 88
08-222-2	4909 F	10 AUG 88
08-222-3	4899	10 AUG 88

PARAMETER	08-222-1	08-222-2	08-222-3
Bromoform, ug/L	<1	<1	<1
Chloroform, ug/L	<1	2	6
Chloromethane, ug/L	<1	<1	<1
Carbon Disulfide, ug/L	<1	<1	<1
Dibromochloromethane, ug/L	<1	<1	<1
Ethylbenzene, ug/L	<1	<1	<1
Freon 113, ug/L	<1	<1	<1
Methyl Isobutyl Ketone, ug/L	<1	<1	<1
Methyl Ethyl Ketone, ug/L	<10	<10	<10
Methylene Chloride, ug/L	<1	<1	<1
Tetrachloroethylene, ug/L PCE	<1	4	3
Styrene, ug/L	<1	<1	<1
Trichloroethylene, ug/L TCE	<1	1	<1
Trichlorofluoromethane, ug/L	<1	<1	<1
Toluene, ug/L	<1	<1	<1
Vinyl Acetate, ug/L	<10	<10	<10
Vinyl Chloride, ug/L	<1	<1	<1
Total Xylene Isomers, ug/L	<10	<10	<10
trans-1,2-Dichloroethylene, ug/L	<1	<1	<1
trans-1,3-Dichloropropene, ug/L	<1	<1	<1

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ANALYTICAL REPORT

LOG NO: P88-08-222

Received: 10 AUG 88
Reported: 08 SEP 88

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-08-222-1
Sample Description: 4909 C

General Mineral Analysis
Sampled Date 10 AUG 88

Anions	mg/L	meq/L
Nitrate (as NO3)	0.8	0.013
Chloride	17	0.48
Sulfate	30	0.62
Bicarbonate (as HCO3)	520	8.6
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		9.7

Cations	mg/L	meq/L
Sodium	44	1.9
Potassium	4.8	0.12
Calcium (EDTA Titration)	120	6
Magnesium	22	1.8
Total Milliequivalents per Liter		9.8

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarb Alk (as CaCO3)	430
Ca Hardness (as CaCO3)	300
Mg Hardness (as CaCO3)	90
Total Hardness (as CaCO3)	390
Iron	1.3
Manganese	<0.005
Copper	<0.02
Zinc	0.04
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	330
Sp. Conductance, umhos/cm	570
pH, units	7.6

* Conforms to Title 22, California Administrative Code

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P88-08-222

Received: 10 AUG 88
Reported: 08 SEP 88

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-08-222-2
Sample Description: 4909 F

General Mineral Analysis
Sampled Date 10 AUG 88

Anions	mg/L	meq/L
Nitrate (as NO3)	73	1.2
Chloride	40	1.1
Sulfate	75	1.6
Bicarbonate (as HCO3)	390	6.4
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		10.3

Cations	mg/L	meq/L
Sodium	48	2.1
Potassium	5.3	0.14
Calcium (EDTA Titration)	140	7
Magnesium	24	2
Total Milliequivalents per Liter		11.2

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarb Alk (as CaCO3)	320
Ca Hardness (as CaCO3)	350
Mg Hardness (as CaCO3)	99
Total Hardness (as CaCO3)	449
Iron	0.49
Manganese	<0.005
Copper	<0.02
Zinc	<0.03
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	630
Sp. Conductance, umhos/cm	1000
pH, units	7.5

* Conforms to Title 22, California Administrative Code

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P88-08-222

Received: 10 AUG 88
Reported: 08 SEP 88

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Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-08-222-3
Sample Description: 4899

General Mineral Analysis
Sampled Date 10 AUG 88

Anions	mg/L	meq/L
Nitrate (as NO3)	21	0.34
Chloride	26	0.73
Sulfate	44	0.92
Bicarbonate (as HCO3)	290	4.8
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		6.8

Cations	mg/L	meq/L
Sodium	31	1.3
Potassium	3.1	0.079
Calcium (EDTA Titration)	93	4.6
Magnesium	14	1.2
Total Milliequivalents per Liter		7.2

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarb Alk (as CaCO3)	240
Ca Hardness (as CaCO3)	230
Mg Hardness (as CaCO3)	58
Total Hardness (as CaCO3)	288
Iron	1.1
Manganese	0.008
Copper	<0.02
Zinc	0.10
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	390
Sp. Conductance, umhos/cm	670
pH, units	7.6

* Conforms to Title 22, California Administrative Code

Jeffrey A. Erion, Laboratory Manager

APPENDIX B

GROUND WATER VELOCITY CALCULATION

LAW ENVIRONMENTAL, INC.
a professional engineering and earth science consulting firm

JOB NO. 58-7057 SHEET 1 OF 1
JOB NAME Hewitt SWAT Supp.
BY MA DATE 06-19-89
CHECKED BY [signature] DATE 6-20-89

$$\text{Velocity} = V = \frac{KI}{\alpha}$$

I = drop / distance = 20 ft / 2595 ft. = .0077

K = 320.8 ft/day (from Hewitt SWAT)

α = .20 (from Hewitt SWAT)

$$V = \frac{320.8 \text{ ft/day } (.0077)}{.20} = \frac{2.472438}{.20} = \boxed{12.36 \text{ ft/day}}$$

$$V = 12.36 \text{ ft/day} \times 365 \text{ day/year} = \boxed{4511.4 \text{ ft/year}}$$

LAW ENVIRONMENTAL, INC.

3420 N. SAN FERNANDO BLVD.
SUITE 200
BURBANK, CALIFORNIA 91504
818-848-0214
PANAFAX 818-848-1674

June 6, 1988

CalMat Properties
3200 San Fernando Road
Los Angeles, California 90065

Project No. 58-7057

Attention: Mr. George Cosby

Gentlemen:

SWAT REPORT FOR HEWITT LANDFILL (CLOSED)
North Hollywood District
City of Los Angeles, California

In accordance with our discussions, we are submitting this Solid Waste Assessment Test - Water for the Hewitt Landfill. This report includes results of site exploration, our interpretation of the data, and our conclusions concerning existing conditions at the site.

If you have any questions, please don't hesitate to call us.

Yours very truly,

LAW ENVIRONMENTAL, INC.

by Steve McArdle
Steve McArdle
Staff Geologist

by Glenn A. Brown
Glenn A. Brown, C.E.G. 3
Senior Vice President

SM/pd
(6 copies submitted)

cc: (2) RWQCB

TABLES

PLATES

APPENDICES

SOLID WASTE ASSESSMENT TEST REPORT - WATER

HEWITT LANDFILL

NORTH HOLLYWOOD DISTRICT, LOS ANGELES, CALIFORNIA

FOR

CALMAT COMPANY

PROJECT NO. 58-7057

SCOPE

This report presents the Solid Waste Water Quality Assessment Test - Water (SWAT) for the Hewitt Landfill. This report includes the results of the vadose zone and ground water monitoring program as required by Assembly Bill No. 3525 (Calderon Act). Because there has not been a full year of monitoring since the SWAT proposal was approved (before the SWAT report deadline), we will continue quarterly sampling for the remainder of 1988 and for one quarter in 1989. Submitted with this report are the results of the April, 1988 monitoring.

This program was approved by the Regional Water Quality Control Board (RWQCB) on November 2, 1987. It has been prepared in accordance with the SWAT proposal and related correspondence for the site. The SWAT proposal (our Project No. 58-7057), which was submitted on March 31, 1987 is in the RWQCB file. Related correspondence are included in Appendix A of this report. Site information is included in the SWAT proposal. This report has

also been prepared in accordance with the Solid Waste Assessment Test Guidance document prepared by State Water Resources Control Board dated October 1986.

The additional monitoring work performed thus far for this SWAT program include:

1) Construction of one downgradient monitoring well

2) Collection and analysis of ground water samples from three monitoring wells, which were obtained during the month of April 1988. A pump with an inflatable packer was employed to insure depth specific samples. Analyses are included in Appendix B.

3) Construction and installation of two lysimeters for vadose zone monitoring.

4) Construction and installation of one leachate well.

For this study we obtained data for wells within a one-mile radius of the site. We also determined the ownership of the wells, the depth of presently existing wells in the vicinity of the landfill, and available background water quality data.

Our study included review of well data at the Los Angeles County Flood Control District office, and a review of published data from the California Department of Water Resources and the California Regional Water Quality Control Board. This report is based on available information from site records, operators, and agency files. No warranty as to the completeness or accuracy of these accounts is made.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

SITE CHARACTERISTICS

The Hewitt Landfill is located at 7361 Laurel Canyon Boulevard, North Hollywood District, City of Los Angeles, California. The site is owned by CalMat Company, but the landfill was operated by Los Angeles By-Products Company. The site is located in Section 1, Township 1N, Range 15W, in Section 36, Township 2N, Range 15W. The site is shown on Plate 1, Local Geology and Well Location Map. The site has not received refuse since its closure in 1975; the land is currently used for Cal-Mat Self-Storage

and for an auto, recreational vehicle, and boat storage yard business.

EFFECT OF SITE ON GROUND WATER

Only non-hazardous solid waste and inert waste were permitted in the landfill. No liquid or hazardous wastes were accepted. Decomposition of non-hazardous solid wastes in landfills produces gas and, where water is present, leachate is also produced. Leachate is liquid that has percolated through solid waste and has extracted, dissolved or suspended material from it.

Ground water would be affected if leachate reaches it; ground water or surface water in contact with non-hazardous solid wastes would facilitate production of leachate. Water quality could also be affected by landfill gas in contact with ground water.

In general, the more water flowing through non-hazardous solid wastes in a landfill, the greater the amount of pollutants that will be leached. However, concentration of leachate depends on dilution and solubility of the waste materials, and decreases with time. There is no indication that any appreciable amount of water has infiltrated the landfill to generate leachate. Rainfall is low, drainage is controlled, and soil used for landfill

cover is fine grained and relatively impermeable. Since the Waste Discharge Requirements stated that nonwater soluble non-decomposable inert waste be deposited below elevation 655 and that decomposable commercial residential refuse be deposited above that elevation, the site was designed to prevent possible inundation of decomposable waste by ground water. Because the San Fernando Valley is an adjudicated basin, the water demand is expected to continue at current or higher levels, eliminating any potential threat of ground water inundation. Drilling in the refuse indicated that it was dry to moist, and that no free water was present in isolated pockets or lenses perched above the water table. See Appendix E for results of refuse moisture content sampling.

Leachate characteristics at landfills vary widely and no general method has been developed to predict the exact composition which may be produced in a particular fill. In general, leachate in ground water would be expected to increase chloride and other minerals, TDS, COD and alkalinity.

Decomposition of non-hazardous solid wastes in the landfill produces gas that is chiefly methane and carbon dioxide. Methane is generally of little influence on ground water quality. The landfill has an extensive gas recovery system. In general, gas

in contact with ground water would cause increase in CO_2, hardness, soluble gases, odor, and create an anaerobic environment. Anaerobic bacteria consume nitrate and sulfate that may be present in ground water. The Air Quality SWAT is being done by others. Analyses of landfill gas are present in Appendix C. The analytical results are discussed later in this report.

TOPOGRAPHY AND DRAINAGE

Generally, the natural ground slopes about two percent to the south, but drainage has been altered locally by road building. The topography at the landfill is shown at a scale of 1" = 1000' on Plate 1, Local Geology and Well Location Map. Table 1, Water Wells, lists wells located within one mile of the site and available well information.

Natural drainage direction in the area is to the south; however, no runoff enters the landfill from off-site or leaves the site, so that only rain that falls on the site can percolate. Much of the soil used for cover was fine-grained with a relatively low permeability. Additionally, a large portion of the site is paved with asphalt. Therefore, due to lower permeability soils and asphalt, much of the water from precipitation leaves the site by evaporation.

Table 1
WATER WELLS

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3780	225	16	16	?	?	?		None	?	No	No	?
3780A	597	20	20	?	?	City of Los Angeles	1929	None	?	Yes	No	City of L.A.
3780B	145	3/4	?	?	?	?	1929	None-capped	?	No	No	?
3780C	787	?	?	?	?	L.A. Dept. of Water & Power	1963	Municipal Supply	?	Yes	No	L.A. DWP
3790	375	20	20	?	?	?	1924	Destroyed 1959	?	Yes	No	?
3790A	546	20	20	?	?	City of Los Angeles	1929	Destroyed 1959	?	?	No	City of L.A.
3790B	467	?	?	?	?	City of Los Angeles	1931	Municipal Supply	?	?	No	City of L.A.
3790C	494	20	20	?	166 - 178 200 - 225 250 - 266 274 - 304 308 - 366 421 - 460	E.A. Buss	1948	?	?	Yes	No	?
3790D	481	20	20	?	222 - 298 367 - 298 432 - 460	L.A. Dept. of Water & Power	1951	Municipal Supply	?	Yes	No	L.A. DWP
3790E	596	20	20	?	220 - 262 275 - 370 418 - 452	Fred Aleanter	1959	Municipal Supply	?	Yes	No	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3790F	570	20	20 Tool	Cable 198 - 340 348 - 376 412 - 445 465 - 540	160 - 187	L.A. Dept. of Water & Power Municipal Supply	1958	L.A. Dept. Water & Power	?	Yes	Yes	L. A. DWP
3790G	760	20	20	?	?	L.A. Dept. of Water & Power	1964	None Capped 4-64	?	Yes	?	L. A. DWP
3790H	802	20	20	?	265 - 370 432 - 462 502 - 648 700 - 720	L.A. Dept. of Water & Power	1967	?	?	Yes	?	L. A. DWP
3790J	No Information										Yes	?
3791	91	8	8	No Information							Yes	?
3791A	No Information							Destroyed 1950	No Information			?
3791B	No Information							Destroyed 1950	No Information			?
3800	393	20	20	?	105 - 135 172 - 276 282 - 309 318 - 374	So. California Drilling Co.	1924	Domestic & Irrigation	?	No	No	?
3800A	583	16	16	?	160 - 535	F.E. Griswold	1924	Municipal Supply	?	No	No	?
3801	109	7	7	?	?	?	Prior to 1947	Abandoned	?	No	No	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3810	495	20	20	?	?	?	Prior to 1924	Municipal Supply	?	Yes	No	?
3810A	465	?	?	?	110 - 225 245 - 302 327 - 392	?	?	Municipal Supply	?	Yes	No	?
3810B	419	?	?	?	120 - 149 155 - 181 185 - 214 220 - 265 320 - 387	H.E. Bredehoft	1947	Municipal Supply	?	Yes	No	?
3810C	No Information											?
3810D	No Information											?
3810E	No Information							Destroyed 7/50				?
3810G	150	20	20	?	?	?	?	Casing Sealed 4/66	?	No	No	?
3810H	350	12	12	?	?	?	?	Capped 7/66	?	No	No	?
3810J	150	20	20	?	80 - 150	M.R. Peck & Sons	1957	None - Sealed 4/66	?	Yes	No	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3810K	812	20	20	Cable Tool	250 - 258 292 - 392 535 - 603 631 - 660 710 - 760	L.A. Dept. of Water & Power	1962	Municipal Supply	?	Yes	No	L.A. DWP
3810L	714	20	20	?	?	L.A. Dept. of Water & Power	?	Municipal Supply	?	Yes	No	L.A. DWP
3810M	822	20	20	Cable Tool	300 - 395 435 - 443 475 - 510 565 - 625 650 - 692 736 - 795	L.A. Dept. of Water & Power	1968	Municipal Supply	?	Yes	Yes	L.A. DWP
3810N	855	20	20	Cable Tool	300 - 305 333 - 395 423 - 484 490 - 515 550 - 620	L.A. Dept. of Water & Power	1969	Municipal Supply	?	Yes	Yes	L.A. DWP
3810P	865	20	20	Cable Tool	308 - 323 328 - 407 418 - 425 435 - 448 514 - 575	L.A. Dept. of Water & Power	1970	Municipal Supply	?	Yes	Yes	L.A. DWP
3810Q	640	20	20	Cable Tool	248 - 275 280 - 346 358 - 400 420 - 454 480 - 520	L.A. Dept. of Water & Power	1970	Municipal Supply	?	Yes	Yes	L.A. DWP

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3810R	738	20	20	Cable Tool	280 - 406 448 - 460 494 - 497 503 - 522 533 - 538	L.A. Dept. of Water & Power	1970	Municipal Supply	?	Yes	No	L.A. DWP
3810S	414	20	20	?	110 - 142 162 - 221 245 - 288 297 - 391	So. Calif. Drilling Company	1924	Municipal Supply	?	Yes	No	?
3810T	687	20	20	?	205 - 222 250 - 280 327 - 389 405 - 413 422 - 433	L.A. Dept. of Water & Power	1963	Municipal Supply	?	Yes	No	L.A. DWP
3800C	555	20	20	?	206 - 246 260 - 283 318 - 338 338 - 410 464 - 508 514 - 534	H.E. Bredehoft	1954	Municipal Supply	?	Yes	No	?
3800D	770	20	20	?	255 - 275 318 - 396 573 - 583 645 - 676	L.A. Water District	1962	?	?	Yes	No	L. A. Water District
3811	90	?	?	?	?	C.E. Tomson	1916	Destroyed 7/50	?	No	No	?
3811A	96	?	?	?	?	?		Destroyed 3/50	?	No	No	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3811B	?	7	7	No Information								?
3811C	?	12	12	?	?	?	?	Capped 4/59	?	No	No	?
3811D	No Information							Destroyed 1924	No Information			?
3811E	248	8	8	?	110 - 147 168 - 178 182 - 226	Elmer A. Buss	1945	Observation	?	Yes	No	?
3811F	632	20	20	?	204 - 214 270 - 313 365 - 380 425 - 446 447 - 491 522 - 542 555 - 600	C.A. Tomson H.E. Bredehoft	1953	Municipal Supply	?	Yes	No	?
3811G	601	20	20	?	190 - 227 274 - 319 344 - 352 360 - 367 407 - 427 445 - 461 543 - 549	C.A. Tomson H.E. Bredehoft	1953	Municipal Supply	?	Yes	No	?
3820	?	?	?	?	?	C.A. Tomson Supply	?	Municipal	?	No	No	?
3820A	?	?	?	?	?	?	1915	Destroyed 7/50	?	No	No	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
3820B	No Information						1930	Municipal Supply	No Information			?
3820C	No Information					L.A. Water Department	1930	Municipal Supply	No Information			L. A. Water Dept.
3820D	No Information					L.A. Water Department	1930	Municipal Supply	No Information			L. A. Water Dept.
3820E	512	20	20	?	150 - 175 185 - 204 232 - 274 284 - 369 501 - 509	L.A. Water Department	1951	Municipal Supply	?	Yes	No	L. A. Water Dept.
3820F	780	20	20	?	?	L.A. Water Department	1959	Municipal Supply	?	Yes	No	L. A. Water Dept.
3820G	No Information											?
4895B	No Information											?
4897	450	20	?			L.A. Dept. of Water & Power	1932	Monitoring	?	Yes	Yes	L. A.
4897A	370	8	8	?	60 - 75 90 - 105 130 - 145 180 - 370	L.A. Dept. of Water & Power	1963	Ground Water Observation	?	Yes	Yes	?
4889	148	?	?	?	?	C.E. Tomson	1916	?	?	Yes	No	?
4898	363	20	20	?	250 - 330	L.A. Dept. of Water & Power	1974	?	?	Yes	Yes	?

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
4919	197	12	12	?	?	?	?	None - Destroyed or Collapsed Casing		No	No	?
4919A	128	?	?	?	?	?	1934	Domestic	?	No	No	?
4919B	156	6	?	Excavated		A.R. Tomson	1948	Observation	?	No	No	?
4919D	No Information											?
4929	731	20	20	?	200 - 214 264 - 217 350 - 473 487 - 502 562 - 572 586 - 638 658 - 714	C.A. Tomson	1983	None Capped	?	Yes	Yes	?
4909	No Information							None - Destroyed 11/24/50	?			?
4909A	254	16	16	?	?	So. Calif. Drilling Co.	1924	Destroyed 1944	?	Yes	No	?
4909B	326	16	16	?	230 - 270 300 - 314	Saunders Bros.	1952	Sand & Gravel Washing	?	Yes	No	?
4918	365	9	9	Rotary	164 - 365	Howard Pump	1984	Monitor 0 - 156		Yes	Yes	L.A. By Products
4918A	500'	6	6	Rotary	230 - 240 300 - 310 390 - 410 480 - 490			Monitoring	?	Yes	Yes	DWP

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
4899	290	12 1/2	12 1/2	Rotary	120 - 280	Howard Pump	1984	Monitoring	0 - 110	Yes	Yes	CalMat
4918A	500	6	6	Rotary	230 - 240 300 - 310	Cofferdam Unwatering	1985	Monitor	?	Yes	Yes	L.A. DWP
4927	375	8	8	Rotary	175 - 375	Howard Pump	1984	Monitoring	0 - 145	Yes	Yes	L.A. By Products
4928A	452	8	8	Rotary	224 - 433	Howard Pump	1984	Monitoring	0 - 100	Yes	Yes	L.A. By Products
4928B	362	8	8	Rotary	161 - 362	Howard Pump	1984	Monitoring	0 - 138	Yes	Yes	L.A. By Products
Penrose #5	370	8	8	Rotary	160 - 369	Howard Pump	1988	Monitoring	0 - 35 145 - 150	Yes	Yes	L.A. By Products
Tuxford #6	359	8	8	Rotary	160 - 358	Howard Pump	1988	Monitoring	0 - 50 145 - 150	Yes	Yes	L.A. By Products
Tuxford #7	379	8	8	Rotary	160 - 375	Howard Pump	1988	Monitoring	0 - 40 145 - 150	Yes	Yes	L.A. By Products
Newberry #8	377	8	8	Rotary	160 - 375	Howard Pump	1988	Monitoring	0 - 40 145 - 150	Yes	Yes	L.A. By Products
4909C	500	6	6	?	230 - 240 290 - 300 390 - 400 480 - 490	?	1984	Monitoring	?	Yes	Yes	L.A. DWP
Second Downgradient Hewitt	348	8	8	Rotary	138 - 348	Howard Pump	1987	Monitoring	0 - 123	Yes	Yes	CalMat

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
4919	197	12	12	?	?	?	?	None - Destroyed or Collapsed Casing		No	No	?
4919A	128	?	?	?	?	?	1934	Domestic	?	No	No	?
4919B	156	6	?	Excavated		A.R. Tomson	1948	Observation	?	No	No	?
4919D	No Information											?
4929	731	20	20	?	200 - 214 264 - 217 350 - 473 487 - 502 562 - 572 586 - 638 658 - 714	C.A. Tomson	1983	None Capped	?	Yes	Yes	?
4909	No Information							None - Destroyed 11/24/50	?			?
4909A	254	16	16	?	?	So. Calif. Drilling Co.	1924	Destroyed 1944	?	Yes	No	?
4909B	326	16	16	?	230 - 270 300 - 314	Saunders Bros.	1952	Sand & Gravel Washing	?	Yes	No	?
4918	365	9	9	Rotary	164 - 365	Howard Pump	1984	Monitor 0 - 156		Yes	Yes	L.A. By Products
4918A	500'	6	6	Rotary	230 - 240 300 - 310 390 - 410 480 - 490			Monitoring	?	Yes	Yes	DWP

Table 1
WATER WELLS
(continued)

Well No.	Depth (ft)	Top Diam. (in)	Bottom Diam. (in)	Drilling Method	Interval Perforated Depth (ft)	Drilling Contractor	Year Drilled	Well Use	Seal Depth (ft)	Log Existence	W.Q.* Analysis Available	Owner
4899	290	12 1/2	12 1/2	Rotary	120 - 280	Howard Pump	1984	Monitoring	0 - 110	Yes	Yes	CalMat
4918A	500	6	6	Rotary	230 - 240 300 - 310	Cofferdam Unwatering	1985	Monitor	?	Yes	Yes	L.A. DWP
4927	375	8	8	Rotary	175 - 375	Howard Pump	1984	Monitoring	0 - 145	Yes	Yes	L.A. By Products
4928A	452	8	8	Rotary	224 - 433	Howard Pump	1984	Monitoring	0 - 100	Yes	Yes	L.A. By Products
4928B	362	8	8	Rotary	161 - 362	Howard Pump	1984	Monitoring	0 - 138	Yes	Yes	L.A. By Products
Penrose #5	370	8	8	Rotary	160 - 369	Howard Pump	1988	Monitoring	0 - 35 145 - 150	Yes	Yes	L.A. By Products
Tuxford #6	359	8	8	Rotary	160 - 358	Howard Pump	1988	Monitoring	0 - 50 145 - 150	Yes	Yes	L.A. By Products
Tuxford #7	379	8	8	Rotary	160 - 375	Howard Pump	1988	Monitoring	0 - 40 145 - 150	Yes	Yes	L.A. By Products
Newberry #8	377	8	8	Rotary	160 - 375	Howard Pump	1988	Monitoring	0 - 40 145 - 150	Yes	Yes	L.A. By Products
4909C	500	6	6	?	230 - 240 290 - 300 390 - 400 480 - 490	?	1984	Monitoring	?	Yes	Yes	L.A. DWP
Second Downgradient Hewitt	348	8	8	Rotary	138 - 348	Howard Pump	1987	Monitoring	0 - 123	Yes	Yes	CalMat

GEOLOGY

GENERAL

The site is located in the northeast quarter of the San Fernando Valley Basin. The San Fernando Valley is an elliptical alluvium-filled extensional basin, approximately 23 miles long and 12 miles wide. Alluvium has been deposited from streams and rivers that have carried erosional debris from surrounding upland areas. The valley is an extensional basin within the Transverse Ranges Geomorphic Province. This valley has several hydrogeologic subareas based on physiographic and geologic features. The site is located within the San Fernando Subarea, which is subjacent to all the other subareas, and receives surface drainage from each of them.

The San Fernando Subarea is separated from the other subareas by folds and faults, alluvial constrictions, or man-made works. All but 9% of the Upper Los Angeles River Ground Water Basin is included in the subarea. The San Fernando Subarea is divided into eastern and western units based on grain size. The valley alluvium of the western portion is fine grained material that transmits water at relatively slow rates. It is derived from surrounding sedimentary rock, whereas the valley alluvium

from the eastern portion is coarser grained material that transmits water at relatively higher rates. The coarser grained material is eroded from granitic basement complex of the San Gabriel and Verdugo Mountains. The site is located in the coarse grained eastern portion of the Valley.

The alluvium filling the San Fernando Subarea is Pleistocene and Holocene age. The material was transported and deposited by Tujunga Wash. The alluvium covers Upper Miocene age Modelo Formation and the middle Miocene Topanga Formation. These Miocene sedimentary rocks in turn cover the pre-Cretaceous age crystalline and metamorphic basement complex rocks. Plate 2, Regional Geology, shows general geology over a wide area surrounding the site.

GEOLOGIC MATERIALS

The geologic units found in the eastern San Fernando Subarea are, from youngest to oldest: 1) Holocene alluvium, 2) upper Pleistocene (older) alluvium, 3) Miocene sedimentary formations, and 4) pre-Cretaceous crystalline and metamorphic rocks. The geologic units are described briefly as follows:

Holocene Alluvium

The Holocene alluvial deposits of the eastern San Fernando Subarea consist of poorly bedded alluvial fan deposits left by washes draining Tujunga and La Tuna Canyons. The alluvial fan deposits are mainly accumulations of light grey subangular boulders, gravels, and sands. Typical alluvial fan deposits are coarsest near the canyon mouths and become finer farther away. The deposits are uncemented, but are so tightly packed that they stand at 1:1 or steeper slopes. The Holocene deposits are approximately 75 to 100 feet thick. These deposits are highly permeable, but are high above the water table and do not hold significant amounts of water.

Upper Pleistocene (Older) Alluvium

The older alluvium is also made of alluvial fan sediments left by older streams having nearly the same source areas as the present streams. Like the Holocene alluvium, these deposits are also crudely horizontally stratified. There is no associated change in materials at the transition between the Holocene deposits and the Pleistocene alluvium. The stratification is based on a slight color change between the light grey upper sediments and the light orange-brown to reddish-grey older sediments.

The Pleistocene deposits consist of brownish to orange-grey silty, subangular sand, cobbles and boulders. The rock types are similar to the younger materials, so the regional topography and drainage were probably similar during the respective depositional periods. The environment of deposition, as indicated by grain size distribution and bedding, does not change through the sequence. The only difference between the Holocene and Pleistocene alluvium seems to be a difference in the amount of weathering.

Miocene Sedimentary Rocks

The Miocene sedimentary rocks include the middle Miocene Toganga Formation and the upper Miocene Modelo Formation. Both formations consist of marine shales, siltstones, sandstones and some conglomerates. The Topanga Formation also contains volcanic flows and breccias. Some of these older sediments make up the west abutment of Hansen Dam, located 4 miles to the north-northeast. The Miocene Formations are present deep beneath Hansen Dam, in the Shadow Hills area to the northeast (Read, 1943), and in the Pacoima Hills. These rocks are not used for water supply in the San Fernando Valley, and were not considered part of the waterbearing sequence by the State Water Rights Board (1962).

Basement Complex

Pre-Cretaceous crystalline and metamorphic rocks occur beneath all the waterbearing deposits of the basin are called the basement complex. These rocks are mostly granitic rocks with intrusive dikes which were locally metamorphosed to schists and gneisses. They form the main mass of the San Gabriel Range to the north and Verdugo Mountains to the east.

Although these rocks are poor aquifers, they are recharge areas. They have about one percent primary porosity, but are fractured, weathered and jointed. This secondary porosity allows the basement rocks to act as limited recharge areas where exposed to rainfall in the hill and mountain areas.

GEOLOGIC STRUCTURE

The geologic structure near and beneath the site includes bedding, unconformities, and faults. The Holocene and Pleistocene alluvial fan and stream deposits have crude horizontal stratification with weakly developed bedding. A major unconformity is found at the contact between Pleistocene alluvium and the older granitic and sedimentary rocks. None of the monitoring wells encountered the underlying bedrock.

Nearby faults include the active San Fernando Fault Zone, the potentially active Verdugo Fault and the Northridge Hills Fault. Table 2 gives criteria for fault activity classification. Plate 3, Regional Seismicity, shows major faults and earthquake epicenters in Southern California. Plate 4, Geologic Sections, shows lithology and structural features for sections through the site.

San Fernando Fault Zone (Active)

The nearest Alquist-Priolo Special Studies Zone is along the San Fernando Fault northeast of the site. The Tujunga segment of the fault is 4.3 miles northeast of the site. The latest major activity on the fault was the magnitude 6.4 earthquake of February 9, 1971. The earthquake produced accelerations of about 0.5g at the site, but did no observable damage.

Verdugo Fault (Potentially Active)

The trace of the Verdugo Fault is located approximately 1.8 miles northeast of the site, as shown on Plate 1. The fault forms a barrier to ground water within the Pleistocene deposits. This offsets the water levels north of the fault by over 100 feet. The fault has been mapped on the surface in northeastern Glendale and at scattered locations in Burbank. Although the

TABLE 2
CRITERIA FOR CLASSIFICATION OF FAULTS WITH REGARD TO SEISMIC ACTIVITY
(After D. B. Slemmons, 1979)

Activity Classification and Definition	Criteria		
	Historic	Geologic	Seismologic
Active - a tectonic fault with a history of strong earthquakes or surface faulting, or a fault with a short recurrence interval relative to the life of the planned project. The recurrence interval used to define activity rate may vary according to the consequence of activity.	(1) Surface faulting and associated strong earthquakes. (2) Tectonic fault creep or geodetic evidence of fault displacement or deformation.	(1) Geologically young deposits cut by fault. (2) Youthful geomorphological features that are characteristic of geologically young displacements along the fault trace. (3) Ground water barriers in geologically young or unconsolidated deposits.	Earthquake epicenter can be assigned with confidence to the fault.
Potentially Active - a tectonic fault without historic surface offset, but with a recurrence interval that could be sufficiently short to be significant to the particular project.	No reliable report of historic surface faulting.	(1) Geomorphic features that are characteristic of active faults, but with subdued, eroded, and discontinuous form. (2) Faults not known to cut or displace youngest alluvial deposits, but offset older quaternary deposits. (3) Water barriers in older deposits. (4) Geological setting in which the geometry in relation to active or potentially active faults suggests similar degree of activity.	Alignment of some earthquake epicenters along or near fault, but assigned locations have low degree of confidence in location.
Activity Uncertain - a fault with insufficient evidence to define past activity or recurrence interval. The following classifications can be used until the results of additional studies provide definitive evidence.	Available information is insufficient to provide criteria that are sufficiently definitive to establish fault activity. This lack of information may be due to the inactivity of the fault or to lack of investigations needed to provide definitive criteria.		
Tentatively Active - predominant evidence suggests that the fault may be active even though its recurrence interval is very long or poorly defined.	Available information suggests evidence of fault activity, but evidence is not definitive.		
Tentatively Inactive - predominant evidence suggests that fault is not active.	Available information suggests evidence of fault inactivity, but evidence is not definitive.		
Inactive - A fault along which it can be demonstrated that surface faulting has not occurred in the recent past, and that the requirement interval is long enough not to be of significance to the particular project.	No historic activity.	Geomorphic features characteristic of active fault zones are not present and geological evidence is available to indicate that the fault has not moved in the recent past and recurrence is not likely during a time period considered significant to the site. Should indicate age of last movement: Holocene, Pleistocene, Quaternary, Tertiary, etc.	Not recognized as source of earthquakes.

fault cuts Pleistocene sediments, it does not appear to cut Holocene deposits.

There is no evidence that the ground water barrier formed by the Verdugo Fault extends into Holocene deposits of Tujunga Wash. There is no vegetation line or line of springs present on the 1908 USGS map of the vicinity which show predevelopment conditions. There is no topographic evidence of the fault in the alluvium. Based on the Pleistocene shears and the lack of observable Holocene offset, the fault is considered only potentially active and is not included in the state mandated Alquist-Priolo Special Studies Zone.

Northridge Hills Fault (Potentially Active)

The potentially active Northridge Hills Fault is located four and one-half miles to the northwest of the site and is shown on Plate 2, Regional Geology. Its location is primarily based upon numerous oil test holes that have been drilled in the Northridge Hills. Logs of these wells indicate that the Modelo Formation has been displaced between 500 and 1000 feet along the dip of the fault. The apparent movement along the fault has been dip-slip with the north block moving up. Sparse information indicates that it is a barrier to the movement of ground water in

the Pleistocene age fill west of Sepulveda Boulevard. The fault has no known effect east of Sepulveda Boulevard.

LAND AND WATER USE

The location of monitoring and water wells within about one mile of the site are shown on Plate 1, Local Geology and Well Location Map. There are no known oil or geothermal wells within one mile of the site. The names, owners and addresses (where known) of wells are listed on Table 1. The ownership and location of the wells were determined from well data at the Los Angeles County Flood Control District, Los Angeles Department of Water and Power, and review of published data from the California Regional Water Quality Control Board, and California Department of Water Resources.

The land use within one mile of the site is a mixture of agriculture, residential, and industrial-commercial. A residential tract is located along the east side of the northerly trending finger of the landfill, and along the west half of the north side of the main body of the landfill. Row crops have been grown along the north side of the landfill between the residential area and the small light industrial area along Laurel Canyon Blvd. We understand that this area will no longer be used for agricultural purposes, but will soon be developed for residential use. Bor-

dering the south side of the landfill is the Southern Pacific Railroad Tracks. Laurel Canyon Boulevard borders the east side of the site, and the west side is bordered by light industrial. Plate 5, Land Use Map shows land use within one mile of the site.

Ground water in the vicinity of the site is used for municipal purposes. Because the San Fernando Valley is an adjudicated basin and water rights have been apportioned, future uses will be limited to shifting present uses. Some wells in the vicinity of the site have experienced contamination problems that do not appear related to the site. Compared with past experiences at the Sheldon Area Landfill, where contamination was found a mile downgradient, there are no reported landfill related problems with LADWP's supply wells 2000 feet downgradient.

WASTE CHARACTERISTICS

The site was open to the public for the disposal of waste between 1962 and November 12, 1975. The type of waste that was disposed of below elevations 555 to 560 was limited to solid inert materials. Waste disposed of above 555 to 560 ft. elevations consisted of solid commercial and residential waste and nonwater soluble, nondecomposable inert solid waste. This material consisted of some of the items below:

glass	manufactured rubber products
paper and paper products	market refuse
cloth and clothing	street sweepings
wood and wood products	garbage
lawn clippings, shrubbery	plaster

Although the site did not accept toxic material such as insecticides, poisons, or radioactive waste, some household waste items may have contained minor amounts of hazardous materials. Because of the manner and containers in which it was received, it would have been impossible to reject all of it. The potential amount of household waste containing hazardous compounds is small compared to the overall amount of waste received. The following list includes some of the items normally associated with household refuses:

pesticides	dry cell batteries
varnish	nail polish
dyes	paint
medicine	ink
crankcase oils	various spray cans containing chemicals

Hewitt Landfill also received soil for daily cover of trash. It is estimated that soil used for cover constitutes 10 to 15 percent of the refuse volume.

HYDROLOGY

WATER-BEARING CHARACTERISTICS OF NATURAL MATERIALS

Most of the ground water within a mile of the site is within the Pleistocene alluvium. The Holocene alluvium is more than 100 feet above the perennial ground water surface. The Holocene alluvium transmits water to the Pleistocene alluvium during recharge events. The Miocene and pre-Cretaceous rocks beneath the alluvium are not used for water supply because they do not contain economically exploitable volumes of water.

Holocene Alluvium

The Holocene alluvium lies above the main waterbearing portion of the alluvium. The Holocene alluvium beneath Tujunga Wash is considered by the State Water Rights Board (p. xxxiii, 1962) to have the highest infiltration capacity in the San Fernando Valley. According to maps of the Los Angeles County Flood Control District, the soil type is 015, Tujunga fine sandy loam. The Los Angeles County Flood Control District uses the nomencla-

ture of the USDA for local soils. CDMG (1980) considers soils of the Tujunga and Hanford series to represent the youngest alluvium in the valley.

Pleistocene Alluvium

All of the ground water used in the eastern San Fernando Subarea lies within the Pleistocene alluvium. This unit consists of over 2000 feet of sand, gravel and boulders with red clay lenses. Both alluvial units unconformably overlie the underlying bedrock.

PERMEABILITY TESTING

Permeability of the Pleistocene alluvium was evaluated during construction of Second Downgradient Well. The Holocene sand and gravel in the upper 100 ft. of sediments in the area, are in continuity with the Pleistocene alluvium aquifer.

During well development, a pump test was performed to estimate the transmissivity of the aquifer. The results of the pump test indicates a transmissivity of approximately 240,000 gallons per feet per day. The calculations for the above data are found in Appendix C, Well Completion Report for the second downgradient well.

GROUND WATER MOVEMENT

The movement of ground water in the vicinity of the site is from northwest to southeast. Because the site is not adjacent to the Verdugo Fault, the fault does not affect the flow directions. The Tujunga spreading grounds are located north-northwest of the site and are not directly upgradient of the site. However, under conditions of heavy water spreading, flow gradients in the vicinity of the site are probably affected. Plate 6, Ground Water Contours, Velocity, and Flow Direction, shows details of ground water elevations, velocity and flow direction.

SPRINGS

There are no known springs within a mile of the site or within the site itself. Ground water did occasionally appear in the bottoms of the deeper gravel pits when large amounts of water were spread during the Spring. This water was part of the ground water body, so its quality was the same as that of ground water.

MONITORING WELLS

The following are all the monitoring wells for the site, along with a description of which area each is in the best position to monitor based on the flow directions:

Well	Area Monitored
Well #1	Upgradient
Well #2 (4909C)	Downgradient
Well #3 (Second Downgradient Well)	Downgradient

All wells have had a pump and packer assembly installed for sampling the top 20 feet of the water table. See Plate 7, Retrofit Packer Assembly For New and Existing Wells at Hewitt Landfill, for details.

DEPTH SAMPLING PROCEDURE

Discrete depth sampling was done for Wells 1 and 3 on April 4, 1988, and Well 2 on April 26, 1988.

At the request of the RWQCB the three monitoring wells to be used during the SWAT Program have been provided with a permanent submersible pump and inflatable packer, which allows for the discrete sampling of the upper 20 feet of water surface. A

prefabricated shroud and rubber packer was attached beneath the 2 HP pump and 1 inch discharge pipe for each well.

The pump and packer assembly has been set approximately 20 feet below the water level surface, except in the case of Well 2 (4909C). This well has four perforated zones with concrete seals between each zone. The pump was set below the first perforated interval below the water table. During the sampling run it was discovered that the upper zones were not properly developed, as the well was pumped dry. With the permission of the well owner (DWP) the well pump was pulled and the well was redeveloped. The pump was reset in the well a little deeper than before, but not beyond the next perforated interval. The packer was inflated and the well was pumped greater than three volumes without running dry. Details of the packer setting are shown on Table 3. Well Completion Reports are found in Appendix C.

The well sampling starts with inflating the packer with compressed nitrogen to a predetermined pressure. The pump operates with power provided by a portable generator. Each well has three times its volume of water pumped out before samples are taken.

TABLE 3

MONITORING WELL DATA

CONSTRUCTION DETAILS	UPGRADIENT WELL (WELL 1)	4909C (WELL 2)	SECOND DOWNGRADIENT WELL (WELL 3)
Casing Diameter	8"	6"	8"
Total depth (ft)	290	500	348
Casing Material	0-120 Steel 120-290 PVC	0-500 Steel	0-100' Steel (16") 0-348 PVC (8")
Perforated Interval	120-280	230-240 290-300 390-400 480-490	138-348
Filter Material	Pea gravel	Unknown	3/8" Gravel
Depth and Composition of Seals	0-109 Cement 109-110 Bentonite	Unknown	0-100 Cement 100-123 Bentonite
Date Constructed	11/1/84	Unknown	11/25/84
Depth to Top of Packer	267.42	329.00*	269.00
Depth to Water	246.80	248.08	247.88
Dates Samples	1/8/84 2/27/87 4/4/88	2/27/87 4/26/88	4/4/88
Owner	CalMat	DWP	CalMat

* Packer set additional 20 Ft. below first perforated interval beyond water table to insure sample collection. See discussion under depth sampling procedure.

SWAT SUMMARY

BACKGROUND WATER QUALITY

Background water quality was measured by examining the range of concentrations of major and minor ground water constituents. However, because the sampling for the SWAT program has been limited to one sampling run, conclusions are limited until more analyses are done. The second sampling run will be undertaken late June or early July. Water quality results are located in Appendix B. Sampling not under the SWAT Program was done on two prior occasions at the upgradient well, (Well 1) and on one prior occasion at Well 4909C (Well 2). The existing program requires analyses for the following parameters:

Parameters	Units
General Mineral Analysis . . . . . (pH, EC, TDS, Cl, Na, NO_3, SO_4, CO_2, HCO_3, Ca, Mg, k)	mg/l
Metals . . . . . (As, Ba, Be, Cd, Cr, Co, Pb, Hg, Mo, Ni, Se, Hg, Tb, V, Sb, Al, B, Cu, Fe, Zn)	ug/l
EPA 624, 625 . . . . . (plus MEK and acetone)	ug/l
COD, TOX, Oil and Grease	mg/l

Available water quality analyses for the McBride Well (4889) 3,000 feet upgradient, and the Hewitt upgradient well were reviewed and compared with water quality at the downgradient well. LADWP Well 3800C is reported to have good records of VOCs for several years. The McBride Well (4889) is downgradient of Sheldon-Arleta Landfill. The available analyses are attached in Appendix B. Water analyses including VOCs are available for several LADWP supply wells downgradient.

Preliminary review of the local water analyses shows that upgradient water has had high levels of PCE and TCE. These parameters have been present in Well 4909C and the upgradient well during the same sampling run in 1987, but were not present in the May 1988. Some of the parameters are higher upgradient and lower downgradient, then reverse in the next sampling run. There is no apparent decrease or increase in hardness attributable to landfill gas at the downgradient wells. This is consistent with an old landfill with declining gas production, particularly at the base of the fill. Plates 8 through 14 show results of concentrations of DCA, PCE, TCE, TDS, HCO_3, NO_3, and Cl listed next to the monitoring well locations.

Inorganics

The inorganic constituents analyzed include pH, EC, NO_3, Na, Cl, COD, Alkalinity, CO_2, and TDS. According to reports by LADWP (1983), RWQCB (1975), and California Department of Water Resources (1969), landfills can affect inorganic water quality. The constituents affected are principally CO_2, TDS, Cl, NO_3, HCO_3, and COD.

The following table shows the mineral quality objectives for the area of the Bradley West Landfill. The information is taken from the RWQCB Basin Plan (1975).

TABLE 4

MINERAL QUALITY OBJECTIVES FOR GROUND WATERS

	Objective (mg/l)			
San Fernando Subunit	TDS	Sulfate	Chloride	Boron
North Hollywood-Burbank Area	600	250	100	1.5

The general mineral quality in the vicinity of landfill is within the RWQCB objectives. According to the RWQCB Water Quality Control Plan Report, "....the major threat to water quality is the gaseous product of decomposition. Carbon dioxide production is significant; the gas can migrate through the (unsaturated) soil and dissolve in the ground water resources... Leachate is generally high in BOD and TDS..."

VOLATILE ORGANICS

Volatile organics are found in the upgradient and downgradient monitoring wells. The upgradient well had PCE levels of 200 mg/l in February 1987 that dropped to 2 mg/l in April 1988. Neither one of the downgradient wells show any traces of PCE or TCE during the April 1988 run. However, Well 4909C has 6 and 71 mg/l of PCE and TCE, respectively, during the February 1987 run. Elevated levels of volatile organics is a basin wide problem, whose source is probably careless disposal of industrial waste.

Table 5, Water Quality Summary, shows measured levels of several parameters tested.

VADOSE ZONE MONITORING

To satisfy SWAT requirements, two TIMCO teflon lysimeters were installed in boreholes that were drilled to 50 and 52 ft., respectively. However, we do not endorse the use of lysimeters in gravel. The location of the lysimeter holes is seen on Plate 1, Local Geology and Well Location Map. The lysimeters were installed upgradient and downgradient of the site to insure background sampling and sampling that will be influenced by the landfill. The lysimeter borehole logs and lysimeter construction details are located in Appendix D.

TABLE 5

WATER QUALITY SUMMARY

WELL	DATE	Cl (mg/l)	TDS (mg/l)	HCO_3 (mg/l)	PCE (mg/l)	TCE (mg/l)	NO_3 (mg/l)
Upgradient (Well)	APR '88	27	320	290	2	<1	21
	FEB '87	16	300	340	200	45	0.6
	NOV '84	3.2	420	300	3	-	15
4909C (Well 2)	APR '88	16	520	520	<1	<1	1.4
	FEB '87	35	450	350	6	71	28
Second Downgradient (Well 3)	APR '88	32	570	510	<1	<1	48

To insure a minimum thickness of one and a half inches around the instrument, silica flower mixed with distilled water was poured around the instrument, and frozen prior to installation. To facilitate sampling due to depth the lysimeter contains a transfer vessel.

Sampling was attempted on May 6, 1988, but failed because of lack of moisture. There may not be enough moisture in the alluvium to ever obtain a sample, because the average moisture content of the alluvium is between 3 and 8 percent. However, we

will continue to monitor the lysimeters and will collect samples, if possible. If only a small amount of water is collected by the lysimeters, we will specify analysis on a priority basis. Purgeable priority pollutant analyses (EPA 624) will be done first (chloride, TDS, pH, and one or two metals). If a sufficient quantity of water remains, other parameters will be analyzed.

LEACHATE WELL ANALYSIS

Because the site is unlined and because it does not contain a leachate sump, leachate samples were not obtained. A leachate well that was drilled and constructed through refuse, encountered little decomposable waste in a black silty sand matrix. This material was slightly moist to moist and did not contain any leachate or free liquid of any kind. Data on the moisture content of the trash and matrix is found in Appendix E, along with construction details of the leachate well. The location of the leachate well is on Plate 1, Local Geology and Well Location.

AIR SWAT SUMMARY

As of the date of this report, the completed Air SWAT is not yet available. However, based on the results of the ground water analysis from other sites nearby, we can conclude that although landfill gas does affect water quality, we do not think that

hazardous compounds originating in landfill gas have measurably affected ground water beneath the landfill. We feel that with time we can verify this, after we have gathered a larger data base. The data at this time is too limited to reach any firm conclusion. The gas analysis shows detectable limits of sixteen different compounds, and are presented in Appendix B.

CONCLUSIONS

HAZARDOUS MATERIALS ON SITE

Although records of waste received at Hewitt Landfill are poor, this site does not appear to contain hazardous materials at concentrations that would affect water quality. The site does not produce leachate. Only gas analyses show the presence of trace amounts of solvents.

LEAKAGE OF HAZARDOUS MATERIAL

There is no evidence of leakage of leachate from the Hewitt Landfill. The landfill gas does not appear to be releasing hazardous compounds into ground water.

GAS MIGRATION

There is little or no threat to water quality from gas migration. A gas control system was installed during the mid-1970's. Gas production has been declining with time. The drilling of the leachate well revealed little decomposed waste present. Water quality could be threatened, if the gas system were to cease operation before the fill fully decomposed. However, the gas system is planned to stay in operation.

REMEDIAL ACTION

We recommend continued vigilance in adjusting the gas system, maintenance of a low permeability cover, and maintenance of proper run-off control in order to prevent water from ponding on the site.

-o0o-

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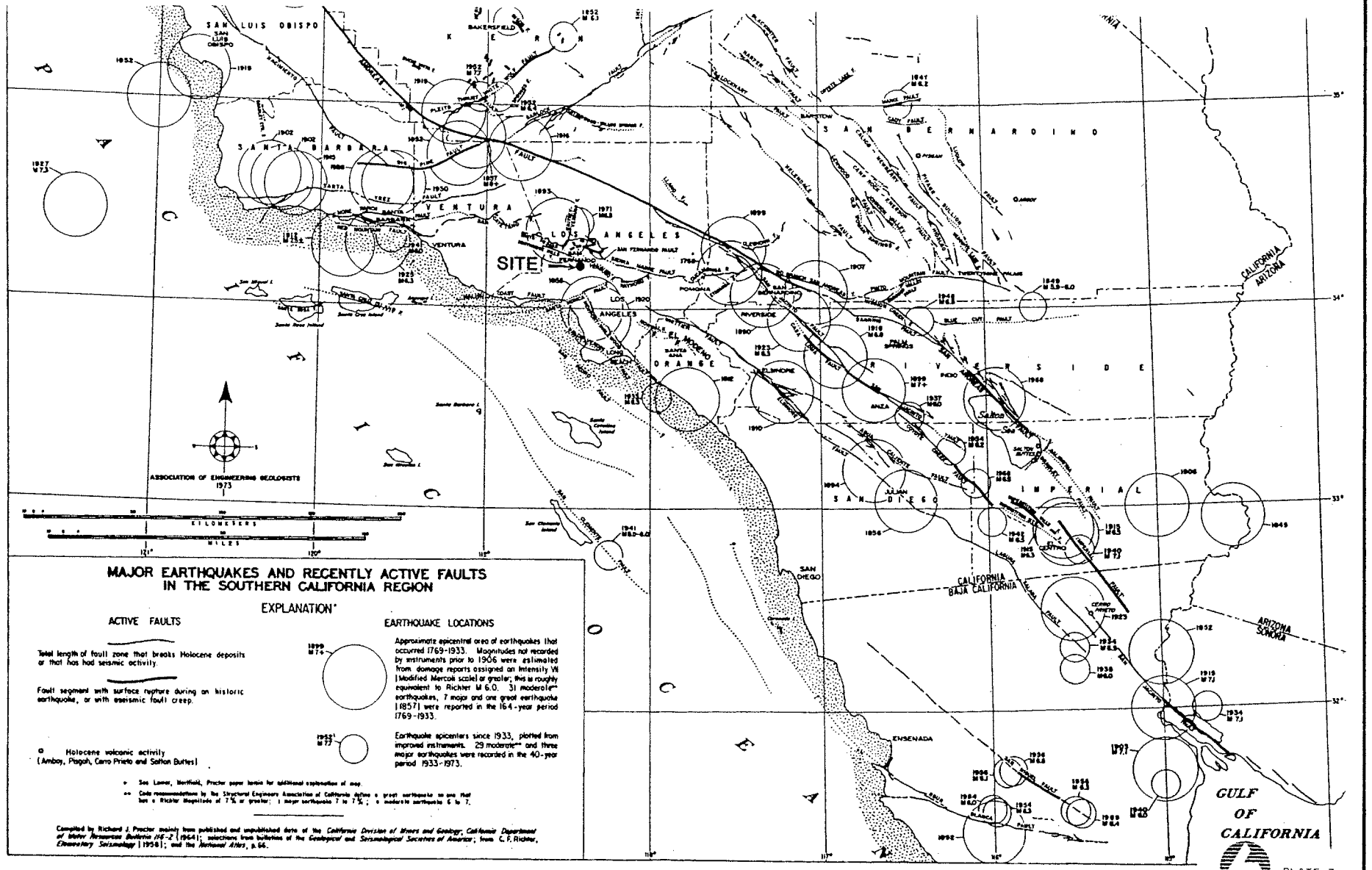
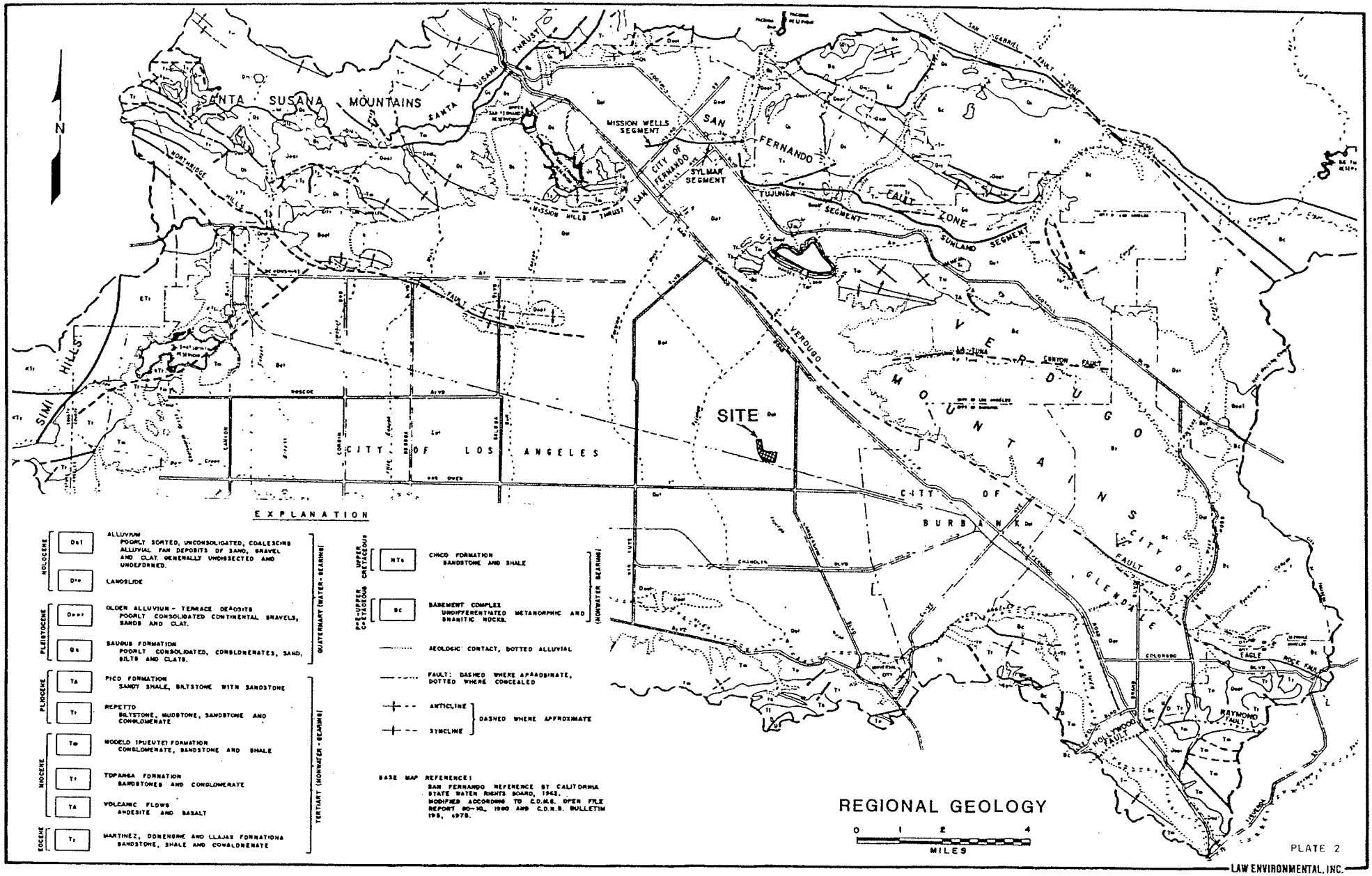


REGIONAL SEISMICITY

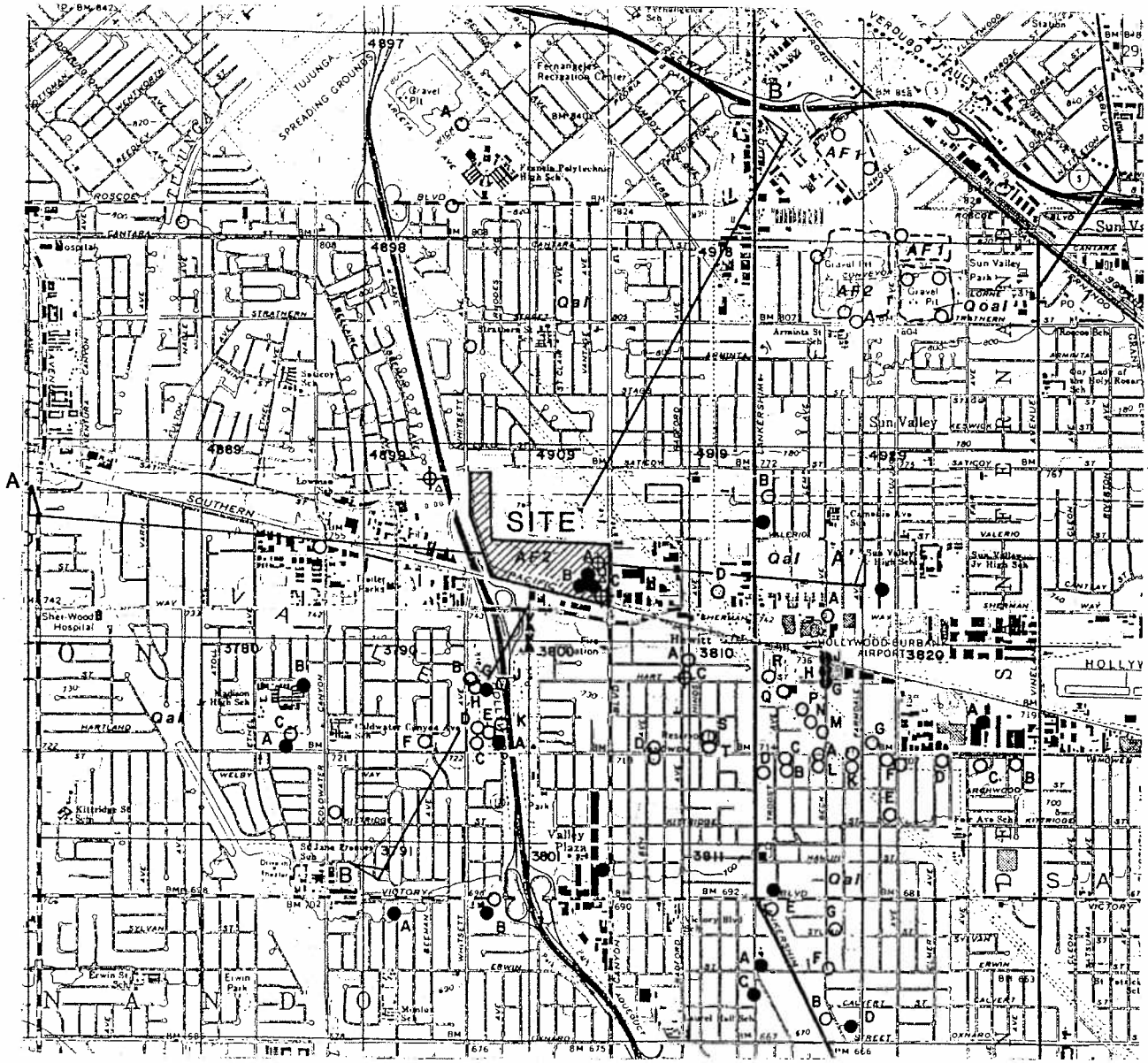
PLATE 3

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-1057 DATE 6/2/88 PROJ. MGR. S.M.S. DFTR. M.G.



PROJECT NO. 58-7057 DATE 5/23/88 PROJ.MGR. SNC DFTR. M.G.



EXPLANATION :

AF2	OLDER ALLUVIUM	HOLOCENE
AF1	VERY OLD ALLUVIUM	HOLOCENE
Qal	QUATERNARY ALLUVIUM	HOLOCENE
Qoal	OLDER ALLUVIUM	PLEISTOCENE

- ○ EXISTING WELL
- ● ABANDONED OR DESTROYED WELL
- ⊕ WELL USED FOR SWAT
- 4929 COUNTY WELL GRID NUMBER
- △ LYSIMETER WELL
- □ LEACHATE WELL
- FAULT

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7½' VAN NUYS QUADRANGLE, PHOTOREVISED 1972 ; C.D.M.G. BULLETIN 196, 1975, SAN FERNANDO, CALIF. EARTHQUAKE OF 9 FEBRUARY 1971 .

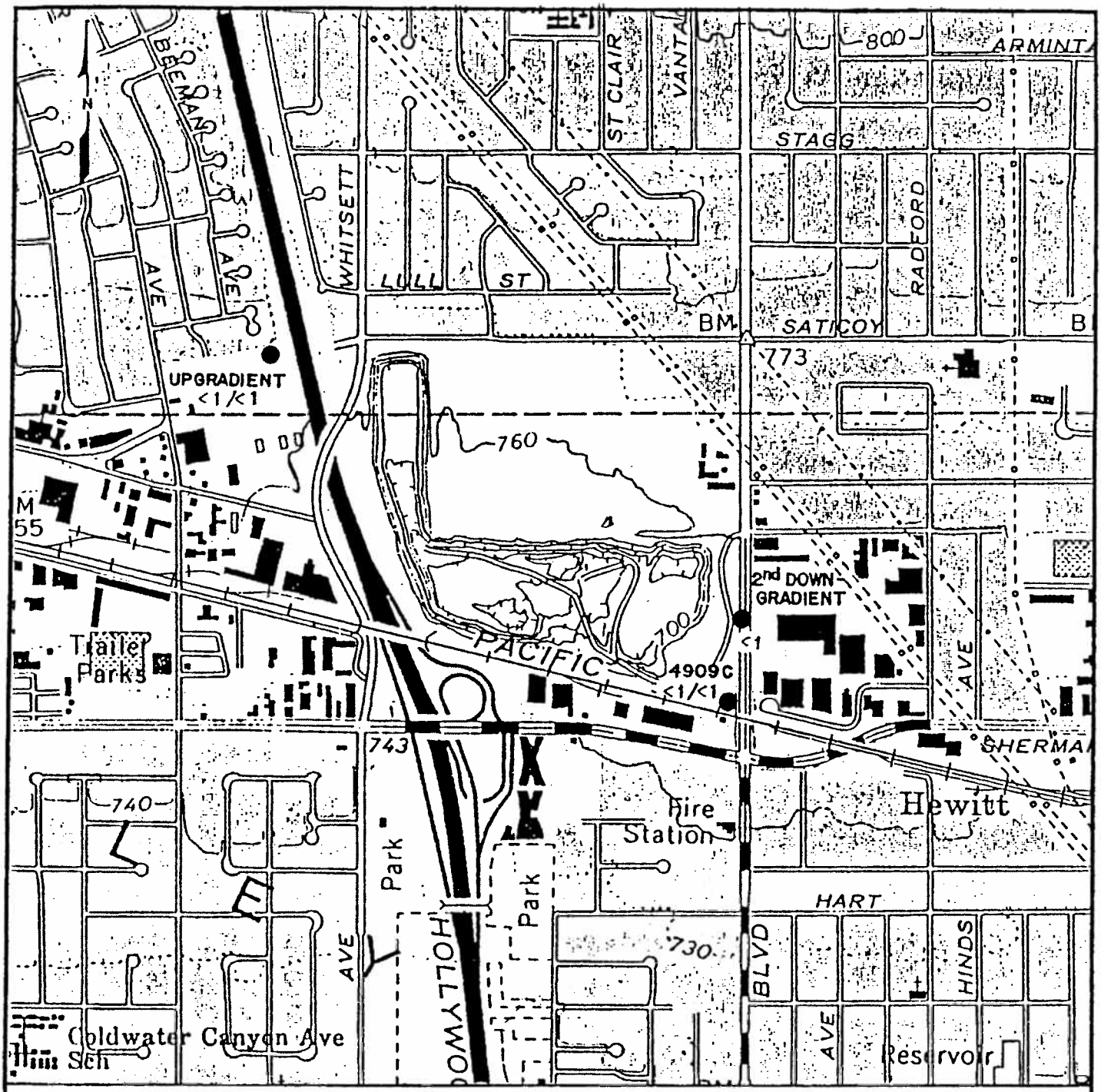
LOCAL GEOLOGY AND WELL LOCATION MAP

0 2000 4000
FEET

PLATE 1

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-7057 DATE 5/23/88 PROJ. MGR. SYC DFTR. MG



4909C **EXPLANATION**

● EXISTING WELL

<1 /<1 Cl in mg/l
- May 1988
- Feb.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED ,NOVEMBER 1987

February 1987 / May 1988

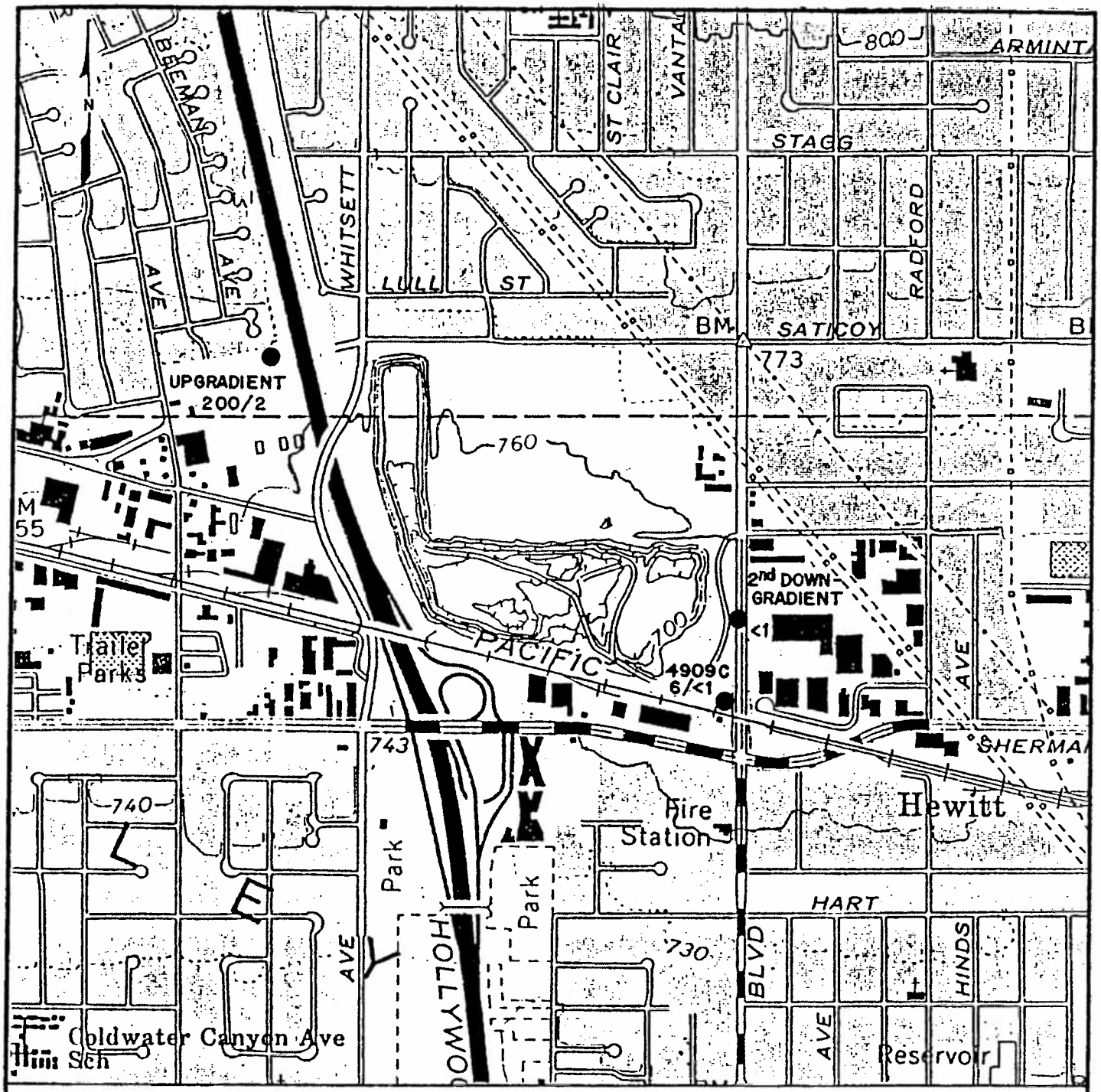
DCA CONCENTRATION

SCALE 1" = 1000'

PLATE 8

LAW ENVIRONMENTAL, INC.

PROJECT No. 38-1037 DATE 5/31/88 PROJ. MGR. DFTR.



4909C **EXPLANATION**

● EXISTING WELL

200 / 2 PCE in ppb
- May 1988
- Feb.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED ,NOVEMBER 1987

February 1987 / May 1988

PCE CONCENTRATION

SCALE 1" = 1000'

PLATE 9

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-7057 DATE 5/31/88 PROJ. MGR. SME DFTR. M.G.

4909C **EXPLANATION**

● EXISTING WELL

71/<1 TCE in ppb
May 1988
Feb.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED ,NOVEMBER 1987

February 1987 / May 1988
TCE CONCENTRATION

SCALE 1" = 1000'

PLATE 10

LAW ENVIRONMENTAL, INC.

PROJECT No. ____ DATE ____ PROJ. MGR. ____ DFTR. ____

4909C ● EXPLANATION

EXISTING WELL

450/520 TDS in mg/l
- MAY 1988
- FEB.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED ,NOVEMBER 1987

February 1987 / May 1988

TDS CONCENTRATION

SCALE 1" = 1000'

PLATE 11

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-...-7 DATE ...31/... PROJ. MGR. ... DFTR. ...

4909C
EXPLANATION

EXISTING WELL

350/520 HCO - in mg/l
MAY 1988
FEB.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5½' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED , NOVEMBER 1987

February 1987 / May 1988

HCO_3 CONCENTRATION

SCALE 1" = 1000'

PLATE 12

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-7057 DATE 5/31/88 PROJ. MGR. SMc DFTR. M.G.

4909C EXPLANATION

● EXISTING WELL

28/14 NO_3 in mg/l
- May 1988
- Feb.1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5½' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED ,NOVEMBER 1987

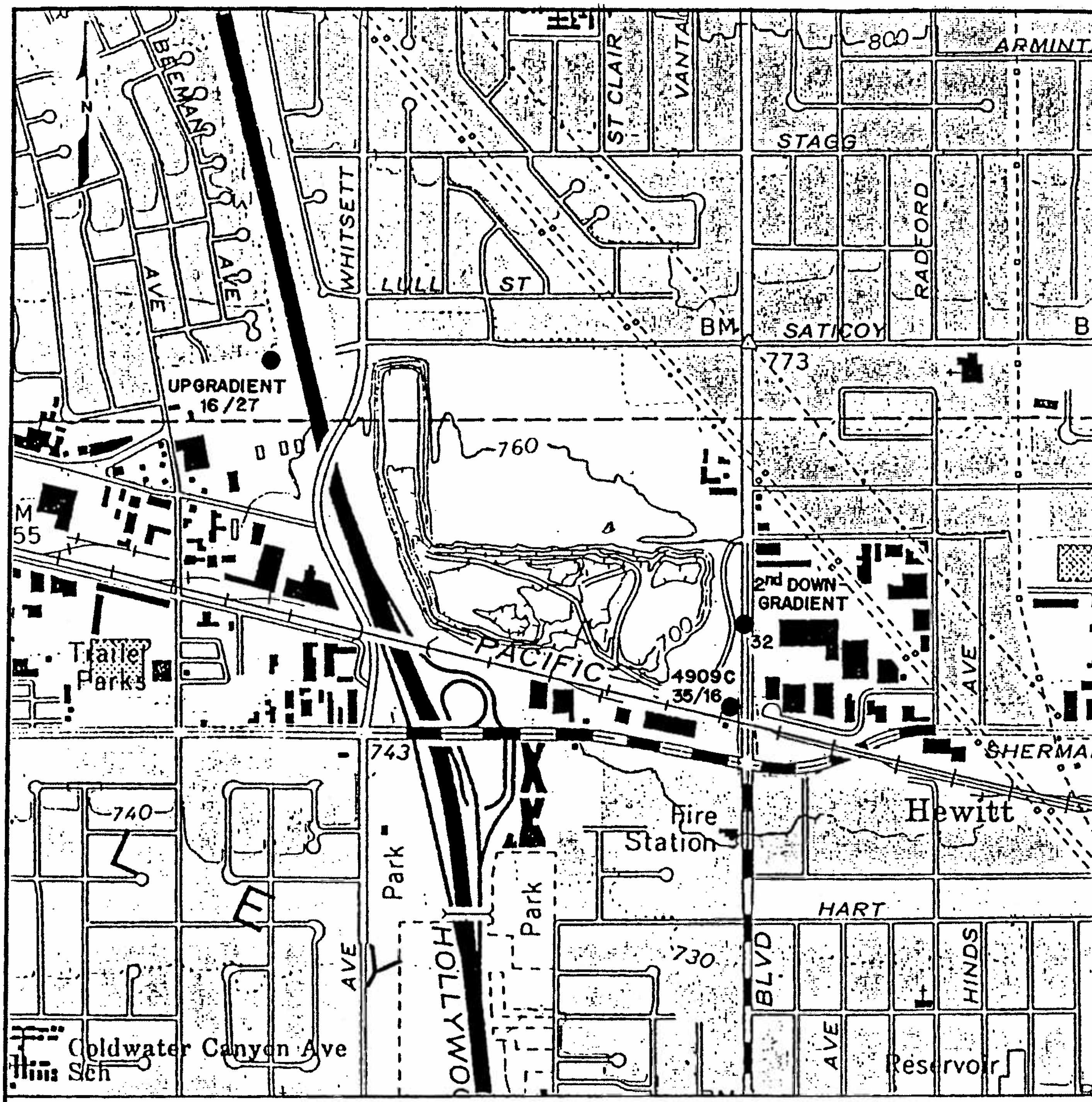
February 1987 / May 1988
NO_3 CONCENTRATION

SCALE 1" = 1000'

PLATE 13

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-37 DATE 8/31/88 PROJ. MGR. SAC DFTR.



4909C

EXPLANATION

EXISTING WELL

35/16

Cl in mg/l

May 1988

Feb. 1987

REFERENCE : BASEMAP FROM U.S. GEOLOGICAL SURVEY 7.5½' VAN NUYS QUADRANGLE (1972)

NOTE : 2nd DOWNGRADIENT WELL DRILLED, NOVEMBER 1987

February 1987 / May 1988

Cl CONCENTRATION

SCALE 1" = 1000'

PLATE 14

LAW ENVIRONMENTAL, INC.

APPENDIX A

RELATED CORRESPONDENCE

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

107 SOUTH BROADWAY, SUITE 4027
LOS ANGELES, CALIFORNIA 90012–4596
(213) 620-4460

November 2, 1987

Mr. George Cosby
Cal Mat Company
3200 San Fernando Road
Los Angeles, California 90065

APPROVAL OF HEWITT LANDFILL SWAT PROPOSAL (FILE NO. 58-191)

We have reviewed your letter, dated September 25, 2987, in reply to our comments concerning the Hewitt Landfill SWAT Proposal.

Your SWAT Proposal for Hewitt Landfill is approved. Your final SWAT Report is due to this Board no later than July 1, 1988, although some monitoring data may have to be submitted later.

If you have any further questions, please call Myra Hart at (213) 620-2385.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer

RKD:MLH

cc: Jim Parsons, State Water Resource Control Board, Division of Water Quality
Glenn A. Brown, Law Environmental, Inc.

STATE OF CALIFORNIA
GEORGE DEUKMEJIAN, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

107 SOUTH BROADWAY, SUITE 4027
LOS ANGELES, CALIFORNIA 90012-4596
(213) 620-4460

September 8, 1987

Mr. George Cosby
CalMat Company
3200 San Fernando Road
Los Angeles, California 90065

SWAT PROPOSAL - HEWITT LANDFILL (File No. 58-191)

After reviewing your SWAT Proposal for the subject site, a meeting was held on July 16, 1987, with representatives of LeRoy Crandall and Associates in which we addressed the following deficiencies in the SWAT Proposal:

1. Existing well construction appears to be inadequate for SWAT ground water monitoring. The long perforated well screen lengths may not provide samples that meet our objectives of achieving a more depth-specific ground water analysis and ensuring minimal dilution of contaminants within the well casing. Please provide a ground water monitoring system which will meet our objectives.

2. Well number 3810C, the southernmost proposed downgradient well, is inadequate for SWAT ground water monitoring because sufficient well construction data is not presented. We require that the wells be positioned as close as possible to the compliance points of the landfill in order to ensure immediate detection of contaminants leaving the waste management unit. Please provide us with an additional downgradient well location. The best location appears to be along Laurel Canyon Boulevard at the northeast corner of the landfill.

3. In addition, please provide detailed drawings and data of the proposed well construction and location.

Please submit comments and/or data concerning the above items to this office by September 30, 1987, in order that we may complete the review and approval process for your SWAT Proposal.

If you have any question, please contact Myra Hart at (213) 620-2385.

Glenn Casper

for RAYMOND K. DELACOURT
Senior Water Resource
Control Engineer

RKD:MLH

cc: ✓Glenn A. Brown, LeRoy Crandall and Associates
Bob Ford, State Water Resource Control Board, Division of Water Quality

September 25, 1987

Cal Mat Company
3200 San Fernando Road
Los Angeles, California 90065 (Our No. 58-7057)

Attention: Mr. George Cosby

Dear Mr. Cosby:

Responses to RWQCB Comments
SWAT Proposal
Hewitt Landfill
(File No. 58-191)

This letter presents our responses to the Regional Water Quality Control Board letter of September 8, 1987.

Comment: #1 - Adequacy of Exiting Wells

Response: The technical justification for having long screens is that the historic change in water levels at the site is about 200 feet. The aquifer is unconfined and has no locally extensive horizontal sublayers. So far, in this aquifer, we see little difference in monitoring results whether we pump wells or bail them, whether they have long or short screens, whether the screen goes above or is entirely below the water table. We have no convincing evidence that dilution occurs in pumped samples, or that devolatilization occurs in bailed samples. However, the existing wells can be modified to provide more depth specific water samples and reduce the chance of dilution of contaminants.

Figure 1 shows a proposed modification of the existing wells to meet these requirements. The wells would be fitted with a packer-pump combination intended to block flow from the lower part of the casing. This would produce the effect of a partially penetrating well in an unconfined aquifer. This is intended to meet the RWQCB requirement of sampling the uppermost aquifer.

For partially penetrating wells in unconfined aquifers, most of the water produced by the well comes from the sides of the cone of depression where the

gradient is steepest. Note that any partially penetrating well, there is some upconing of water from beneath the end of the screen, so merely drilling a short well does not ensure that all water pumped comes from an area above the base of the well. (See Ground Water and Wells, pages 211 and 249.) Hydraulically, the packer-shortened well will behave the same as a truly short well. We do not anticipate any observable water quality changes whether the packer is in place or not.

Comment: #2 - Additional Downgradient Well

Response: The attached Figure 2 shows the proposed location of a new downgradient well. We believe a site a little south of the corner of the site will cover a wider area of the landfill, and ensure that the well is always downgradient of refuse.

Comment: #3 - Well Construction Details

Response: Figure 3 shows details of construction for the required new well, including the packer-pump assembly.

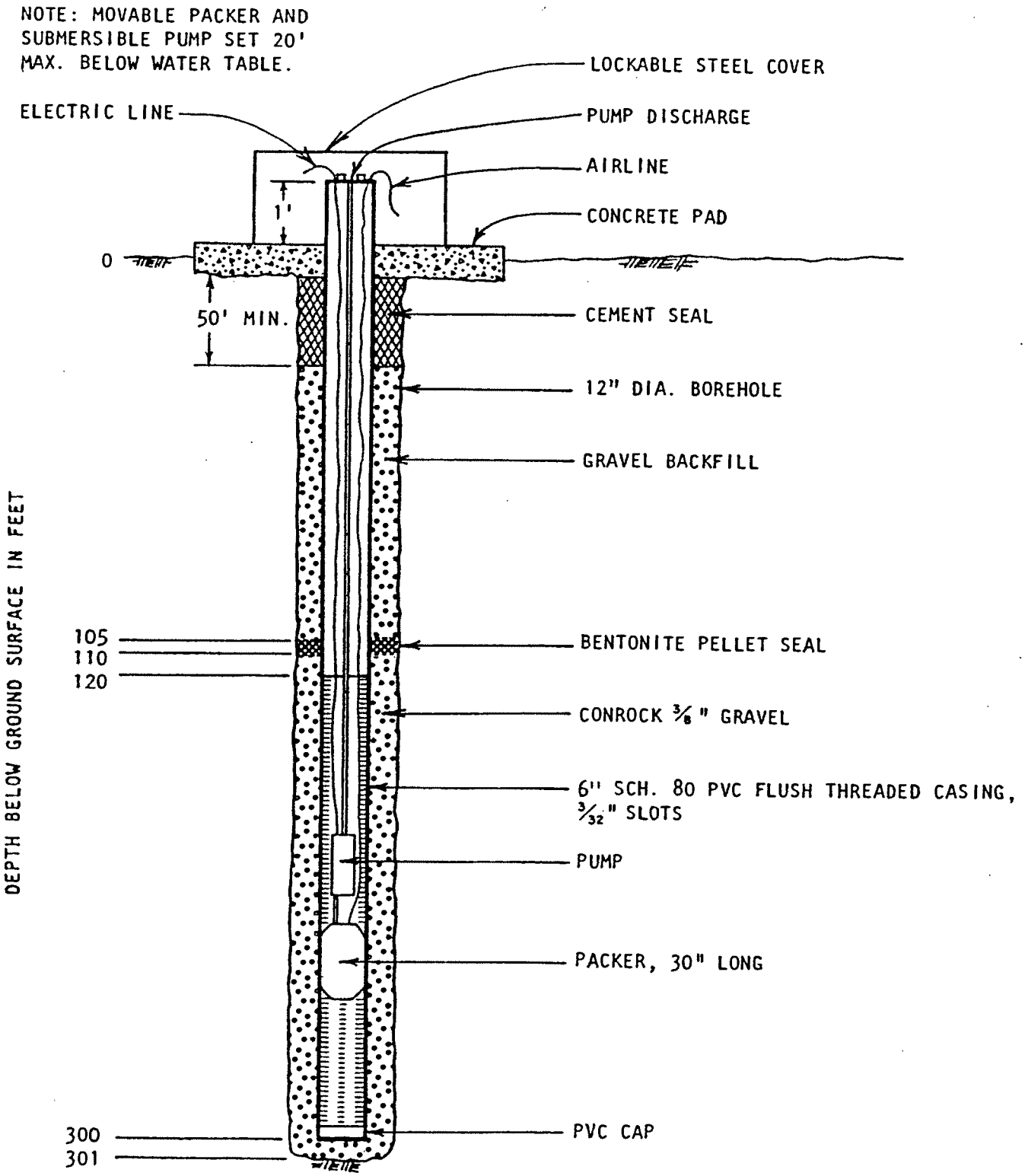
If you have any questions, please contact either Glenn Brown or Alice Campbell at (818) 848-0214, which is our new telephone number.

Yours very truly,

LAW ENVIRONMENTAL, INC.

by Alice Campbell
Alice Campbell C.E.G. 1157

by Glenn A Brown
Glenn A. Brown C.E.G. 3

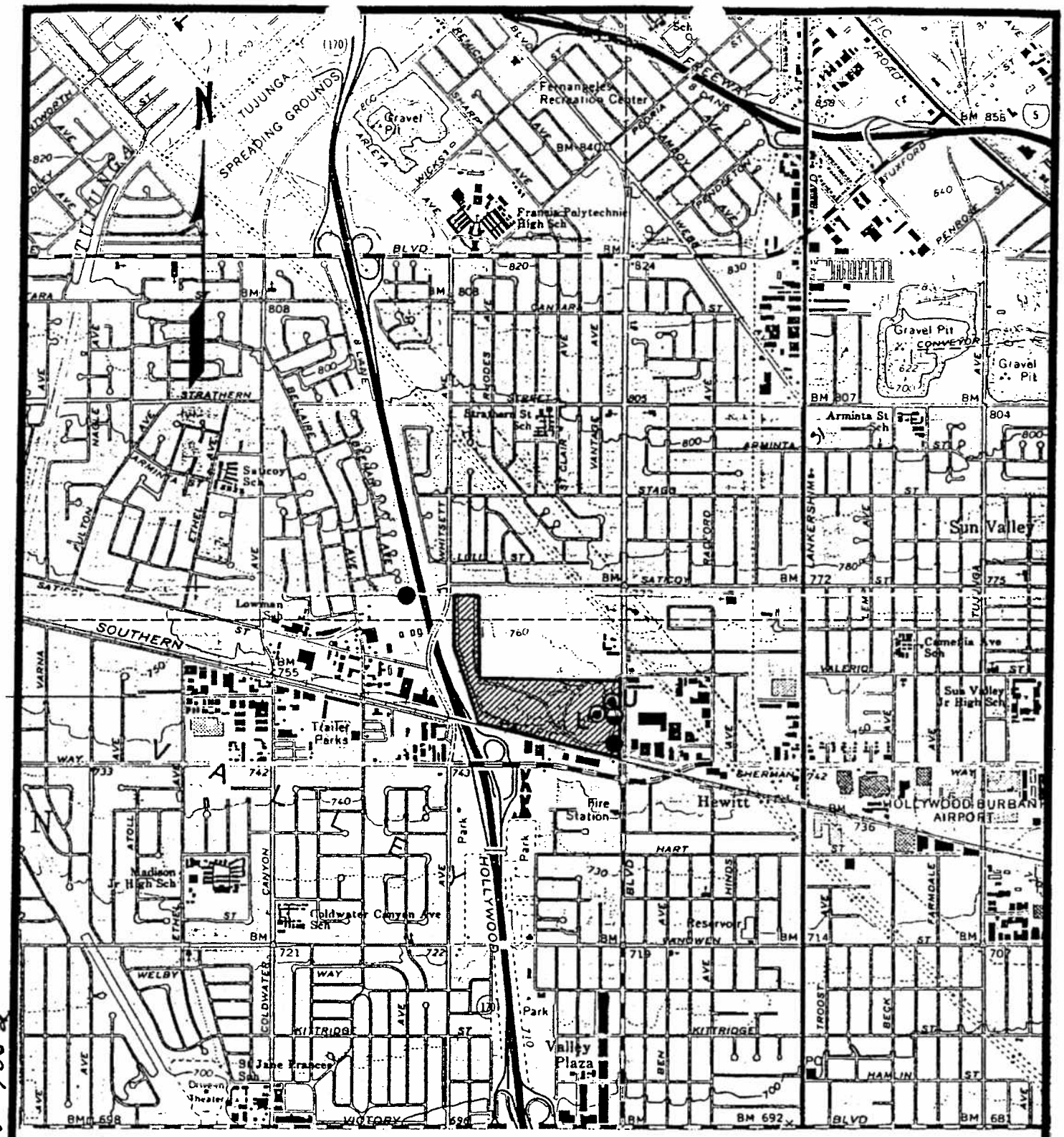


HEWITT LANDFILL

PROPOSED MONITORING WELL CONSTRUCTION DETAILS

NOT TO SCALE

LeROY CRANDALL AND ASSOCIATES



EXPLANATION:

- ● MONITORING WELL
- U ◉ LYSIMETER
- L ◉ LEACHATE TEST HOLE
- ◒ NEW DOWNGRADIENT WELL

REFERENCE:

BASE MAP FROM U.S. GEOLOGICAL SURVEY 7½ MINUTE VAN NUYS QUADRANGLE, 1972.

0 1000 2000

SCALE IN FEET

LOCATION OF MONITORING POINTS
HEWITT LANDFILL

LeROY CRANDALL AND ASSOCIATES

APPENDIX B

WATER AND GAS ANALYSIS

GROUND WATER DATABASE REV: Jun-88

		WAT LEV (ft.)	FIELD MEASUREMENTS (ppm)					LABORATORY ANALYSES (ppm)						GENERAL MINERAL(ppm)									
POINT	DATE	REF PT. W S E	FpH	T(F)	ECf	CO2	Alk	EC	LpH	Ca	Mg	Na	K	CO3	HCO3	SO4	Cl	NO3	B	F	TDS	COD	TOC
1-UP	08-Nov-84							830	7.8	11	14	34.0	3.5	0.0	30	220	3.2	15.0			420		
1-UP	27-Feb-87		7.7	63	720	6.0	153	570	7.5	50	20	46.0	13.0	0.0	340	<1	16.0	0.6			300		6.0
1-UP	04-Apr-88			62	498			620.0	7.8	88.0	13.0	30.0	3.0	<0.6	290.0	50.0	27.0	21.0	0.39	0.2	320	4.0	<0.08
2-DN	23-Jan-85							810	7.2	75	28	33.0	5.0		450	28	17.0				760	<3.0	
2-DN	27-Feb-87		7.1	63	580			760	7.6	110	19	30.0	4.4	0.0	350	56	35.0	28.0			450		<3.0
2-DN	04-Apr-88		7.8	63		27.0	463	810	8.0	120	22	43.0	5.0	<0.6	560	33	16.0	1.4	0.35	0.30	520	<3.0	0.2
3-DN	04-Apr-88		7.5	64	750	15.0	390	960	7.5	130	24	50.0	6.0	<0.6	510	50	32.0	48.0	0.52	0.20	570	<3.0	<0.08

BROWN AND CALDWELL LABORATORIES
373 SOUTH FAIR OAKS AVENUE PASADENA, CA 91105 • (818) 795-7553 • FAX (818) 795-8579

ANALYTICAL REPORT

LOG NO: P88-04-554

Received: 26 APR 88
Reported: 17 MAY 88

Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
04-554-1	Hewitt 1st Down gradients--4909C	26 APR 88

PARAMETER	04-554-1
Vol.Pri.Poll. (EPA-624)	
Date Extracted	05/05/88
Dilution Factor, Times 1	1
1,1,1-Trichloroethane, ug/L	<1
1,1,2,2-Tetrachloroethane, ug/L	<1
1,1,2-Trichloroethane, ug/L	<1
1,1-Dichloroethane, ug/L	<1
1,1-Dichloroethylene, ug/L	<1
1,2-Dichloroethane, ug/L	<1
1,2-Dichlorobenzene, ug/L	<1
1,2-Dichloropropane, ug/L	<1
1,3-Dichlorobenzene, ug/L	<1
cis-1,3-Dichloropropene, ug/L	<1
1,4-Dichlorobenzene, ug/L	<1
2-Chloroethylvinylether, ug/L	<1
2-Hexanone, ug/L	<1
Acetone, ug/L	<10
Acrolein, ug/L	<10
Acrylonitrile, ug/L	<10
Bromodichloromethane, ug/L	<1
Bromomethane, ug/L	<1
Benzene, ug/L	<1
Chlorobenzene, ug/L	<1
Carbon Tetrachloride, ug/L	<1
Chloroethane, ug/L	<1
Bromoform, ug/L	<1
Chloroform, ug/L	<1

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

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Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
04-554-1	Hewitt 1st Down gradients--4909C	26 APR 88

PARAMETER	04-554-1
Chloromethane, ug/L	<1
Carbon Disulfide, ug/L	<1
Dibromochloromethane, ug/L	<1
Ethylbenzene, ug/L	<1
Freon 113, ug/L	<1
Methyl Isobutyl Ketone, ug/L	<1
Methyl Ethyl Ketone, ug/L	<10
Methylene Chloride, ug/L	<1
Tetrachlbroethylene, ug/L	<1
Styrene, ug/L	<1
Trichloroethylene, ug/L	<1
Trichlorofluoromethane, ug/L	<1
Toluene, ug/L	<1
Vinyl Acetate, ug/L	<10
Vinyl Chloride, ug/L	<1
Total Xylene Isomers, ug/L	<10
trans-1,2-Dichloroethylene, ug/L	<1
trans-1,3-Dichloropropene, ug/L	<1

BROWN AND CALDWELL LABORATORIES

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ANALYTICAL REPORT

LOG NO: P88-04-554

Received: 26 APR 88
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Alice Campbell
Law Environmental
3420 N. San Fernando Rd., Suite 200
Burbank, CA 91504

Project: 58-7057

REPORT OF ANALYTICAL RESULTS

Log Number : 88-04-554-1
Sample Description: Hewitt 1st Down gradients--4909C

General Mineral Analysis
Sampled Date 26 APR 88

Anions	mg/L	meq/L
Nitrate (as NO3)	1.4	0.023
Chloride	16	0.45
Sulfate	32.5	0.677
Bicarbonate (as HCO3)	520	8.6
Carbonate (as CO3)	<0.6	<0.02
Total Milliequivalents per Liter		9.8

Cations	mg/L	meq/L
Sodium	43	1.9
Potassium	5.0	0.13
Calcium (EDTA Titration)	120	6
Magnesium	22	1.8
Total Milliequivalents per Liter		9.8

Determination	mg/L
Hydroxide Alk (as CaCO3)	<1
Carbonate Alk (as CaCO3)	<1
Bicarb Alk (as CaCO3)	430
Ca Hardness (as CaCO3)	300
Mg Hardness (as CaCO3)	90
Total Hardness (as CaCO3)	390
Iron	1.3
Manganese	0.008
Copper	<0.02
Zinc	0.03
Surfactants (MBAS)	<0.1
Filterable Residue (TDS)	520
Sp. Conductance, umhos/cm	810
pH, units	8.00

* Conforms to Title 22, California Administrative Code

Jeffrey A. Erion, Laboratory Director

2? 1/62

SANITARY ENGINEERING DIVISION

YEAR ______

LOCATION Well 4897 (Janice?)

CHEMICAL ANALYSES (P.P.M.)

Erleta Landfill

Lab. No.	Sp. Cond.	Ca	Mg	Total Hardness	Na	K	Total ALK. CaCO3 LAB.	SO4	Cl	NO3	SiO2	Fe	B	F	Field pH Lab.	Field Temp. Lab.	NH3	Tot. KJEL. N	NO2	Diss PO4	Field D.O. Lab.	BOD	Cr+6	~~Color~~ CO2	Turb	~~Odor~~ TOC	~~Phen~~ COD	~~??~~ TDS	[illegible]	[illegible]
8	[illegible]	[illegible]	9.3	122	30	3.3	[illegible]	25	17	[illegible]	17	1.0	.16	.21	7.8	21	.00	.08	.04	.17	7.4	2.1		4					.02	
3	[illegible]	[illegible]	7.7	130	29	[illegible]	[illegible]	27	12	11	19	ND	.12	.11	7.6 7.68	16 25	.00	.08	.33	.33	7.6	<.5		4			1.2		<.0[illegible]	
	479			167			[illegible]								7.7									4						
	[illegible]	.	[illegible]	336	-	.	[illegible]	36	17	4.0					[illegible]	17				.10	6.7			8					.05	
	966			356			[illegible]			1.8					7.3 [illegible]	24					7.6			22						
	856	101	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41	13	[illegible]		.01			[illegible]	23				.13	[illegible]			[illegible]					[illegible]	
	991	112	72	372	60	11.7	[illegible]	44	11	3.3	[illegible]	<.01	.47	[illegible]	[illegible]	23	.00	.08	.000	.18	6.4			28					<.05	
	950						[illegible]								7.45						7.0			19						
	980	98	70	278			[illegible]			5.6		.01			7.5 7.42						5.2			24						
7	936			344			[illegible] 410								7.1 7.56						7.8			20						
	950						[illegible]									16					8.6			5						
3	960	106	71	352	54	5.0	435 446	34	14	4.2	19	.02	.44	[illegible]	7.55	23	.00	.12	.000	.10	7.0			31					<.05	
6	976	[illegible]	76	410	43	4.3	[illegible] 515	33	13	2.2	22	.01	.62	.76	7.2 7.34	17 25	.00	.12	.000	.06	[illegible]	1.5		31				[illegible]	.01	
	764			375			[illegible]	35	14						7.30					.07	8.2			28						
9	670	80	15	260	47	4.1	[illegible] 312	35	11	6.7	20	.01	.12	.35	7.63	27					7.4			4						
0	1000 776	120	71	400	117	[illegible]	458 430	30	14	4.0					7.19	17 25	.00	.08	.020	.06	3.6			38					[illegible]	1.8
3	[illegible]	[illegible]	15	250	41	11.3	290 310	113	11						7.62	[illegible]	.00	.04		.02-	8.0			10				912		
	[illegible]	[illegible]	17	344	73	[illegible]	[illegible]	34	13						7.30	17 21					7.8			26				[illegible]		

SANITARY ENGINEERING DIVISION

YEAR ____

LOCATION *Well 4897A* (*[illegible]*) CHEMICAL ANALYSES (P.P.M.)

Lab. No.	Sp. Cond.	Ca	Mg	Total Hardness	Na	K	Field Alk. $CaCO_3$ Lab.	SO_4	Cl	NO_3	SiO_2	Fe	B	F	Field pH Lab.	Field Temp. Lab.	NH_3	Tot. Kjel. N	NO_2	Diss PO_4	Field D.O. Lab.	BOD	Cr^{+6}	CO_2	Turb	TOC	COD	TDS	[illegible]
	[illegible]	94	[illegible]	370	26	4.3	378	46	22	[illegible]	22	.15	.26	.22	[illegible]	[illegible]	.02	.06	.06	[illegible]	5.9	2.7		147	1				.01
	[illegible]	[illegible]	68	1000	41	7.6	[illegible]	25	[illegible]	2.7	29	6.0	.33	.02	6.82	12	.00	.12	.40	.21	0.9	17		60	36				.03
	[illegible]	[illegible]	71	986	50	7.7	[illegible]	26	[illegible]	2.2	27	.9	.39		6.4 6.7	17 25	.00	.24	.08	.32	0.5	4.9		219	28		12		[illegible]
	[illegible]	178	–	950	–	–	[illegible]	–	–	–	–	1.2	.07			–	–	–	–	–	2.1	–		257	–		11		–
	[illegible]	[illegible]	61	820	52	7.7	[illegible]	[illegible]	39	0.0					[illegible]	[illegible]		1.2		.24	0.0			205			15		
	[illegible]	–	–	800	–	–	850	–	–	–					7.55	–		–		–				176					
	[illegible]	130	50	780	53	-	[illegible]	25	31	[illegible]				0.2	6.63	18 23		0.64			0			345					0.05
	[illegible]	[illegible]	52	680			[illegible]	[illegible]	[illegible]	0.6					[illegible] 6.51	18 19				0.18	0			[illegible]		2.2			[illegible]
	[illegible]	–	–	760			[illegible]			0.7					6.59	27				–	0			[illegible]					–
	[illegible]	210	50	730	50	[illegible]	[illegible]	30	[illegible]	[illegible]		1.6			[illegible]	[illegible]				0.13	0			[illegible]					[illegible]
	[illegible]						[illegible]														0			276					
	105[illegible]						[illegible]			1.7					6.65						0			[illegible]					
	14[illegible]	216	51	750			800								[illegible]	25					0			[illegible]					
	[illegible]			695			[illegible]								[illegible] 6.7									220					
	[illegible]						[illegible]								[illegible]						0			[illegible]					
	[illegible]	[illegible]	[illegible]	510	43	[illegible]	[illegible]	[illegible]	11	1.1	77	.13	.15	.17	6.76	26						1.5		126					
	[illegible]	170	24	400	33	11.3	[illegible]	34	11	–	10			.14	[illegible]	[illegible]					[illegible]			89		9.9		534	
	1000						[illegible]								6.8						0.9			70					
	[illegible]						[illegible]								[illegible]						[illegible]			100					
	[illegible]														7.1						0.6			95					

SANITARY ENGIN ERING DIVISION

YEAR ____________

LOCATION WELL 4897A (Sur[illegible] Aquifer) CHEMICAL ANALYSES (P.P.M.)

Date	Lab. No.	Sp. Cond.	Ca	Mg	Total Hard-ness	Na	K	Field Alk. CaCO3 Lab.	SO_4	Cl	NO_3	SiO_2	Fe	B	F	Field pH Lab.	Field Temp. Lab.	NH_3	Tot. Kjel. N	NO_2	Diss. PO_4	Field D.O. Lab.	BOD	Cr^{+6}	~~Color~~ CO_2	Turb	~~Odor~~ TOC	~~Phen~~ COD	TDS	$K_{D,TB}$	
3																															
																															IP
10		[illegible]						[illegible]								7.7						1.0			79						IP
1		[illegible]																													IP
8		941			360			[illegible]			1.6					7.04	7.5	.03	.14	.00	.08	7.7	7.5				1.9	9			IP
5		900																													IP
4		796	108	22	[illegible]	35	4.9	[illegible]	37	11						7.56	16	.03	.15		.01	7.4									IP
4																															
3		[illegible]	79	22	[illegible]	33	4.9	[illegible]	37	[illegible]						7.02	25	.12	.14		1.3	[illegible]			-7				466		IP
9		[illegible]	[illegible]	[illegible]	320	32	[illegible]	370	[illegible]	[illegible]	[illegible]					6.87	22					9.8			76						IP
30																															
28		1640	232	61	830	44	8.2	900	18	2.1	0.9					6.72	23				.17				360		17				
6		1340	92	46	392	42	6.6	460 / 420	17	34	2.1	40				6.75	21 / 24	0.48	.80		.08	.7			168			14			
3																															
7		1600	181	54	680	40	6.0	520	12	77			5.8			7.0	19								170	7					
7		1220	165	46	600	43	6.0	565	14	81		67			7.2	7.39	25.1	.46	1.58		.02										

SANITARY ENGINEERING DIVISION

YEAR ______

LOCATION WELL 489A (Stratford/Whitsett) CHEMICAL ANALYSES (P.P.M.) ARLETA

Date	Lab. No.	Sp. Cond.	Ca	Mg	Total Hardness	Na	K	Field Alk. $CaCO_3$ Lab.	SO_4	Cl	NO_3	SiO_2	Fe	B	F	Field pH Lab.	Field Temp. Lab.	NH_3	Tot. Kjel. N	NO_2	Diss. PO_4	Field D.O. Lab.	BOD	Cr^{+6}	~~Color~~ CO_2	Turb	~~Odor~~ TOC	~~Phen~~ COD	~~Ar~~ TDS	[illegible]	[illegible]
4																															
7		52[illegible]	56	11	184	39	3.8	[illegible] 200	38	16	15					7.77	16 23					8.0			4						[illegible]
4		610	75	14	246	48	4.4	240 240	38	21	–					7.63	25					7.1			6						[illegible]
8		[illegible]	[illegible]	7.6	222	47	4.4	[illegible]	[illegible]	[illegible]	[illegible]					7.62	22					8.0			5						4.9
6		639	72	13	232	44	4.1	250 240	40	20	35					7.70	17 23					8.2			7						
'5																															
0		491	50	11	168	37	3.5	[illegible]	38	30	13					8.0 7.95	18 24					8.0			54						
3		735	86	15	276	50	4.3	[illegible] 270	41	28	33					7.60	16 24					7.1			10		1.6				
-77		516	54	11	180	38	3.5	215	35	12	7.9		.02	.48		7.78						7.2			7			4.0			
-78		537	58	11	188	44	3.6	235 232	37	9.9	4.8		0.15			7.61						7.6			5			1.8			
78		546	61	11	196	44	3.7	237 240	33	11	5.6		0.04			7.50	16 23					12.8			5			1.1			
-78		888	110	25	376	42	4.4	325	53	34	51		0.02			7.65	24														
79		710	85	15	272	53	4.6	330 335	30	13	6.0		0.04			7.59	16					11			8						
-79		1020	136	26	445	50	5.2	400 400	60	28	53	23	0.09			7.31	16 25					9			35		5.2				
-80		1060	140	28	465	54	5.7	420 440	77	33	44	18	<.01			7.66	16 22					7.6			32		1.1				
.80		984	132	27	440	61	5.8	500 440	93	24	29	27	<.01			8.47						7.9			50						

WATER QUALITY DIVISION
LAB REPORT OF ANALYSIS

JUL 10 1985

Results in mg/l unless otherwise indicated

Sample No	Date Taken	Date Rec'd	Collector	Description
-1322	5-1-85	5-1-85	CWS	Janns Well (4897)
2-1323	"	"	"	McBride Well (4899)

Carl Spangenberg

JUL 10 1985

Sample No.			S-1322		S-1323									
Phenols (ppb)			Date Anal		Date Anal		Date Anal		Date Anal		Date Anal		Date Anal	
Total Solids			5/1 FF	312	5/1 FF	480								
Suspended Solids			5/1 FF	8.4	5/1 FF	0.3								
Dissolved Solids			5/1 FF	304	5/1 FF	480								
Oil and Grease														
Total Hardness (as $CaCO_3$)			5/1	278		330								
MPN/ml-Tot. Coliform														
MPN/ml-Fecal Coliform														
Lead		(Pb)	5/28	<0.01	5/28	<0.01								
Cadmium		(Cd)	5/28	<0.002	5/28	<0.002								
Manganese		(Mn)	5/28	2.1	5/28	0.04								
Cyanide		(CN)												
Bromide		(Br^-)		<0.01	7/2 FF	0.32								
Selenium		(Se)	5/1	<0.003	5/1	<0.003								
Iodide		(I^-)	5/17	0.02	5/17	0.02								
Barium		(Ba)	5/28	<0.1	5/28	0.3								
Zinc		(Zn)	5/25	<0.01	5/25	<0.01								
Copper		(Cu)	5/28	0.01	5/28	<0.01								
Silver		(Ag)	5/28	<0.01	5/28	<0.01								
Mercury-mcg/litre		(Hg)												
Total Chromium				<0.01		<0.01								
Hexavalent Chromium		(Cr^{+6})	5/1	<.003		<.003								
Boron		(B)	5/23	.37	5/23	0.42								
Iron		(Fe)	5/28	1.45	5/28	0.01								
Aluminum		(Al)	7/2 FF	0.01	7/2 FF	0.02								
Arsenic		(As)	5/23	<0.01	5/23	<0.01								
Nickel		(Ni)	5/28	<0.01	5/28	<0.01								

R. K. KIRKLAND

JUL 10 1985

REMARKS: Return Results to Carl Spangenberg

APPENDIX C

WELL COMPLETION REPORTS

LAW ENVIRONMENTAL, INC.

3420 N. SAN FERNANDO BLVD.
SUITE 200
BURBANK, CALIFORNIA 91504
818-848-0214
PANAFAX 818-848-1674

December 30, 1987

Cal Mat Properties
3200 San Fernando Road
Los Angeles, California 90065

Project No. 58-7057

Attention: Mr. George Cosby

Gentlemen:

Completion Report
Construction of Second Downgradient
Monitoring Well - Hewitt Landfill
Los Angeles, California

The completion report for the new Second Downgradient Monitoring Well for Hewitt Landfill is attached. This well was installed as part of the landfill SWAT program. The report includes construction details, and a description of materials encountered.

If you have any questions regarding this information, please do not hesitate to contact us.

Yours very truly,

LAW ENVIRONMENTAL, INC.

Vincent A. Richards

by

Vincent Richards
Staff Geologist

by Glenn A. Brown

Glenn A. Brown, C.E.G. 3
Senior Vice President

COMPLETION REPORT

CONSTRUCTION OF SECOND DOWNGRADIENT MONITORING WELL

HEWITT LANDFILL

LOS ANGELES, CALIFORNIA

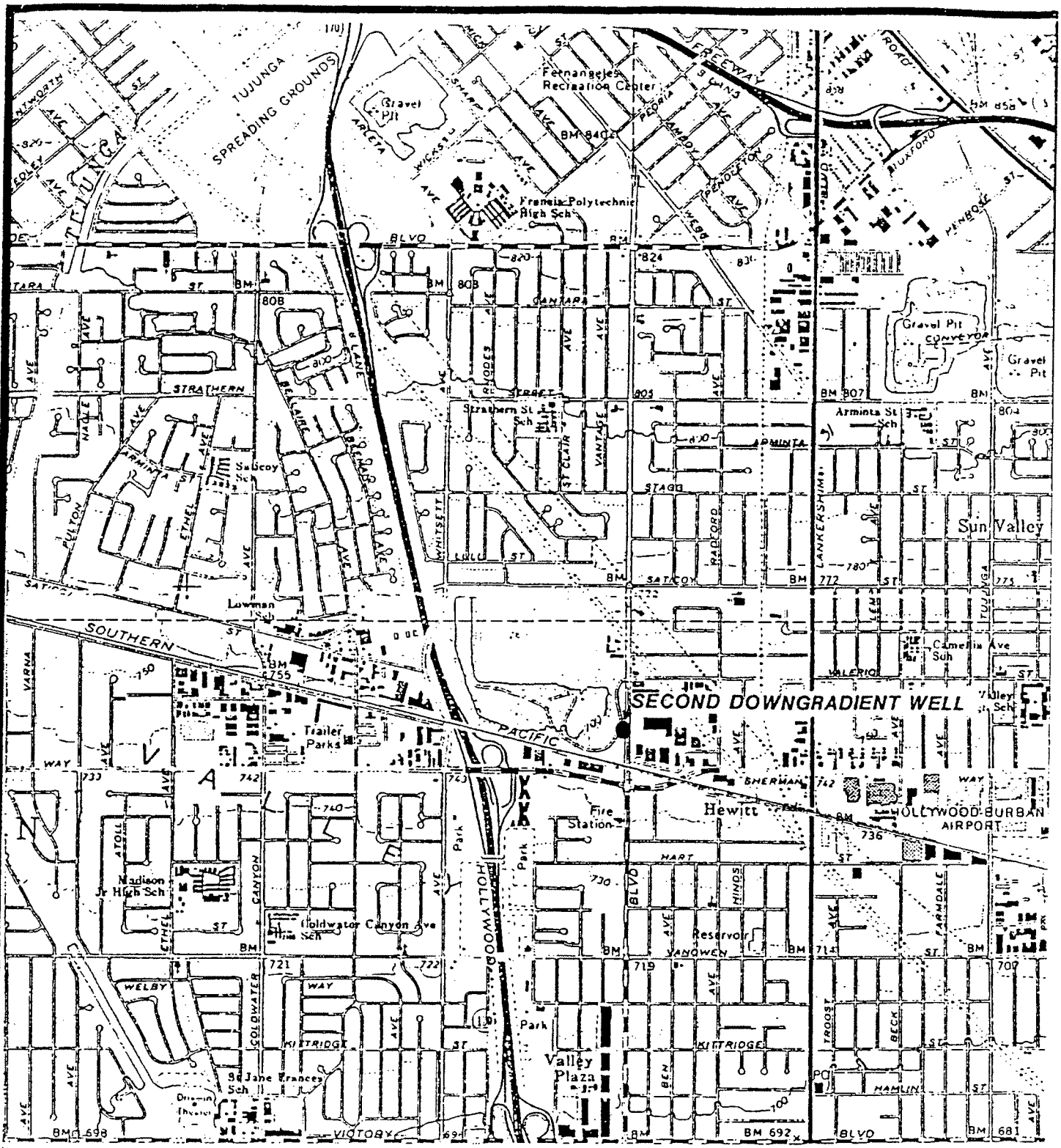
Project No. 58-7057

INTRODUCTION

This report describes the construction of CalMat Company's Second Downgradient Well at the Hewitt Landfill. The well is located in the North Hollywood District of Los Angeles, California, 800 feet north of the northwest corner of Sherman Way and Laurel Canyon Boulevard (see Figure 1).

Well drilling, casing construction, and development of the Second Downgradient Well was provided by Howard Pump, Inc. of Barstow, California. Geophysical logging of the borehole was provided by Welenco, Inc. of Bakersfield, California. Logging of the alluvial materials penetrated, documentation of construction practices, well design, and testing were provided by Law Environmental, Inc. of Burbank, California. All work related to well design and construction supervision was carried out in accordance with verbal authorization from Mr. George Cosby.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geologist practicing in this or similar localities. No other warranty, expressed or implied is made as to the professional advice included in this report.



REFERENCE: BASE MAP FROM U.S.G.S
7½' VAN NUYS QUADRANGLE, 1972

WELL LOCATION MAP

SECOND DOWNGRADIENT WELL
HEWITT LANDFILL

N

SCALE 1"=2000'

FIGURE 1

LAW ENVIRONMENTAL, INC.

JOB _____ DATE _____ DR. _____ O.E. _____ W.P. _____ CHKD _____

FORM 120

HYDROGEOLOGIC CONDITIONS

The lithologic log of the well is presented in Appendix A. The material penetrated by the boring consists of Pleistocene alluvial material derived from San Gabriel Mountains to the north. The alluvial material is predominantly sand and sandy gravel with numerous cobble zones and occasional interbeds of clay and silt. The clay and silt layers became more prominent below 280 feet. The lithologic log indicates that the alluvial materials beneath the site are highly permeable. Ground water was encountered below 250 feet in unconfined conditions.

WELL CONSTRUCTION

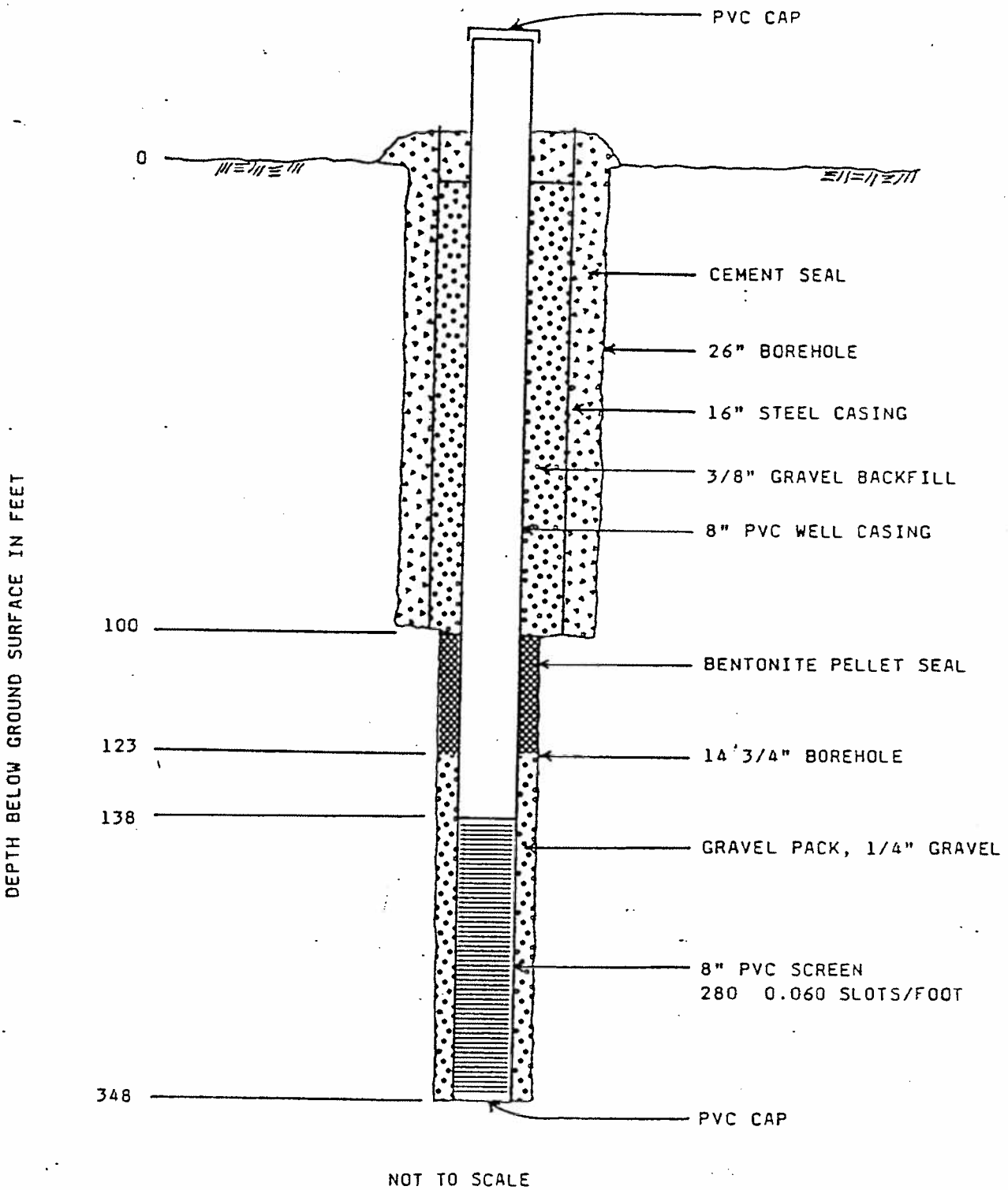
Drilling commenced on November 23, 1987 using a conventional rotary mud method and bentonite drilling mud to stabilize the borehole and remove drill cuttings.

On November 25, 1987, a 9-7/8-inch-diameter pilot hole was drilled to a final depth of 348 feet, and geophysical logging of the borehole was performed (Appendix B). Based on review of the lithologic, gamma-ray, and electric logs, a final well design was completed.

On December 1, 1987, a 26-inch conductor borehole was drilled to a total depth of 100 feet. A 16-inch-diameter conductor was set in the borehole and cemented into place. On December 4, 1987, the well borehole was reamed to a 14-3/4-inch diameter and a total depth of 348 feet below ground surface on December 4, 1987. On December 7, the drilling mud in the borehole was thinned and 8-inch PVC casing and screen placed to the bottom of the borehole. Schedule 80 PVC slotted casing, 280 0.060-inch slots/foot, was set between the depths of 138 feet and 348 feet. Well construction details are presented on Figures 2 and 3. The annular space between the borehole and well screen was filled by 1/4-inch crushed gravel using a Bobcat loader. The gravel pack was placed to 123 feet below ground surface and covered with bentonite pellets, which filled the borehole to the bottom of the conductor casing. The remainder of the borehole was filled with 3/8-inch gravel to the surface.

WELL DEVELOPMENT

Well development was conducted in two separate phases. On December 9 and 10, the well was bailed using a 6-inch bailer for a total time of eight hours. Partial clearing of the water was observed. On December 16, the well was partially developed using a 6-inch turbine pump set at 300 feet. Development consisted of surging the well by the on-off action of the pump. Discharge



NOT TO SCALE

WELL CONSTRUCTION DETAIL

SECOND DOWNGRADIENT WELL

FIGURE 2

LAW ENVIRONMENTAL, INC.

JOB _____ DATE _____ DR. _____ O.E. _____ W.P. _____ CHKD _____

FORM 120

MONITORING WELL CONSTRUCTION DETAILS
WELL NO. - SECOND DOWNGRADIENT WELL

JOB NAME CAL MAT PROPERTIES Job No. 58-7057
Date Construction Commenced 11-23-87 Completed 12-7-87
Drilling Contractor Howard Pump
Supervision By Vince Richards - STEVE McArdle Signature

WELL LOCATION
State CALIFORNIA County LOS ANGELES City
Coordinates

BOREHOLE DRILLING
Conductor Borehole: Depth 100 feet Diameter 26 inches
Drilling Method ROTARY Drilling Fluid BENTONITE + FRESH WATER
Well Borehole: Depth ~~352~~ 348 feet Diameter 14 3/4 inches
Drilling Method ROTARY Drilling Fluid BENTONITE + FRESH WATER

WELL CONSTRUCTION
Conductor Casing Material STEEL ASTM
Length 100 feet ID 16 inches Wall .25 inches
Well Casing Materials SCHEDULE 80 PVC FLUSH THREADED ASTM
Length 138 feet ID 8 inches Wall inches
Well Screen Type ~~SCHEDULE 80 PVC~~ 0.060" SLOTS FLUSH THREADED
Material PVC SCHEDULE 80 ASTM
Length 200210 feet ID 8 inches Wall inches
Slots/foot 280 Length inches Width inches
Filter Pack Material 1/4" CRUSHED GRAVEL Sieve Sizes 4X20
Placement Method DUMP
Sealant Materials BENTONITE PELLETS Volume 19 cu. feet
Volume cu. feet
Placement Method GRAVITY
Protective Well Cap Type PVC CAP
Well Development Procedure BAILING + ~~PUMP~~ TURBINE PUMPING
Duration 12 hours Volume Pumped 40,000 gallons

WELL TESTING
Date of Test 12/17/87 Type CONSTANT DISCHARGE Duration 2.5 hours
Discharge Rate 200 gpm Pumping Water Level ~~253.3~~ 253.5 feet
Specific Capacity 167 gpm/ft Static Water Level 252.3 feet
Sand Content 21 mg/l Drawdown 1.2 feet
Turbidity CLEAR Odors NONE
Elec. Conductance micromhos/cm pH Temperature 60 °C

REFERENCE ELEVATIONS
Surface Elevation feet Top of Casing Elevation feet
Reference Point Elevation for Water Level Measurements feet
Description of Reference Point

REMARK

FIGURE 3

ranged from 50 to 220 gpm. During the discharge period, no visual turbidity was noted.

AQUIFER TESTING

On December 17, a short aquifer test was made on the well. Using the 6-inch turbine pump set at 300 feet, a constant discharge of 200 gpm was held for 2.5 hours. Drawdown was measured by use of an air line and pressure gauge. A summary of these measurements and test data are included in Appendix C.

The available field data from the pump test on the well indicates a transmissivity of ~~44,000~~ gpd/ft and an approximate permeability of ~~4.6 x 10^2 g/ft^2/d.~~ Calculations are shown in Appendix D.

CURRENT STATUS

On December 18, 1987, the turbine pump was withdrawn from the well, and the well is now awaiting permanent installation of a monitoring pump.

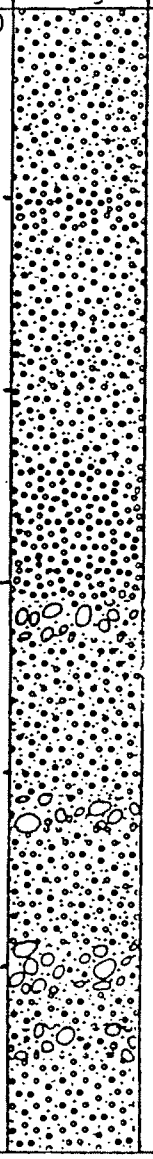
APPENDIX A

LITHOLOGIC LOG

LITHOLOGIC LOG

Owner: CalMat Properties — Well No. Second Downgradient
Drilled by: Howard Pumps — USGS No.
Location: CalMat Storage Yard, 800' North of the NW corner of Sherman Wy. and Laurel Cny.

Drilling method: Mud Rotary — Date completed: 12-7-87
Borehole depth: 348 Ft. — Borehole diameter: 14 3/4 inches
Casing: PVC Sch. 80, 2 Ft. above ground to 133 Ft.
Perforations: PVC Sch. 80 w/280 0.060 slots/foot 138-348 Ft.
Static water level: 252.3 Ft. — Drawdown: 1.2 Ft. — Yield: 200 gpm
Specific capacity: 167 gpm/ft — Electrical conductance: micromhos
Ground elevation: — Top of casing elevation:

Depth	Graphic Log	Description of Materials	
0		SAND & GRAVEL	Predominantly grey to brown fine to coarse grained sand with varing amounts of quartz rich gravel and approximately 5% micaceous silt
20			Increasing gravel 30% and coarse grained sand
40			
			At 50' 80% pea gravel, predominantly quartz diorite and granite
60			Chatter
			Brown to tan sand with gravel
80			Chatter
100			Chatter Sand grain size decreasing, with silt increasing
			Chatter Sand increasing
120			

Remarks: Conductor casing: 16 inch diameter steel casing 0-100 feet

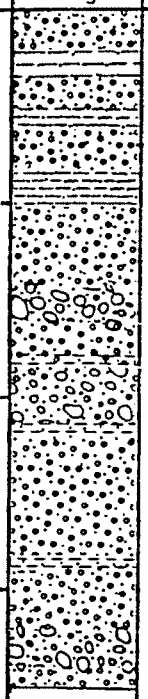
LITHOLOGIC LOG

Second Downgraier
Well No. Well

Depth	Graphic Log		Description of Materials
120			
			Fine to medium sand
140			
			Chatter
160			
			Chatter
		SILTY CLAY	Brown silty clay with a small amount of fine to coarse grained sand and gravel. Some plasticity, sand increasing with depth
180			
		SAND & GRAVEL	Brown to grey, fine to coarse grained sand with varying amounts of gravel
200			Chatter
220			
			Chatter
240			
			Sandier
			Chatter
260			
			Increasing gravel content
			Chatter
280			

LITHOLOGIC LOG

Second Downgradien
Well No. Well

Depth	Graphic Log		Description of Materials
280		SANDY CLAY to CLAYEY SAND	Brown sandy clay and clayey sand with gravel and occasional cobbles, clay increasing with depth
300		SAND & GRAVEL	Brown, fine to coarse grained sand with gravel, and occasional clay and cobble interbeds
			Chatter
			Chatter
320			
340			
			Chatter
			Total Depth - 348 Feet
360			

APPENDIX B

GEOPHYSICAL LOGS

WATER QUALITY DIVISION

REPORT OF WATER ANALYSIS

(Chemical Results In Part Per Million)

O. J. ROGERS
MAY 14 1984

Sample No	Date Taken	Date Rec'd	Collector	Description
1300	4-24-84	4-24-84	DPG	Janns Well No. 4897
1301	"	"	"	Wicks Well No. 4897A

	Sample No.		1300		1301						
✓	Conductivity, μmhos/cm	Date Anal	432	Date Anal	494	Date Anal		Date Anal		Date Anal	Date Anal
	pH, Field		6.5		6.35						
✓	pH, Lab.	4/25 FE	7.05	4/25 PB	6.91		✓				
	Temperature °C, Field		16.5		15		✓				
✓	Temperature °C, Lab.	4/25 PB	23.9	4/25 PB	23.0		✓				
✓	Calcium (Ca)		43		53		✓				
✓	Magnesium (Mg)		12		14		✓				
✓	Total Hardness as $CaCO_3$		156		196		✓				
✓	Sodium (Na)	4/25 FE	16		20		✓				
✓	Potassium (K)	4/25 FE	2.3		3.6		✓				
	Alkalinity as $CaCO_3$ (Total), Field		142.5		217.5		✓				
✓	Lab		134		178		✓				
✓	Sulfate (SO_4)	4/25 FE	38.6	4/25 FE	7.5		✓				
✓	Chloride (Cl)		12		17		✓				
✓	Silica (SiO_2)	5/16 FE	40	5/16 FE	61		✓				
✓	Iron (Fe)	5/16 FE	.03	5/16 FE	.035		✓				
✓	Boron (B)	5/16 FE	0.37	5/16 FE	.47		✓				
✓	Fluoride (F)	5/16 FE	0.73	5/16 FE	0.27		✓				
✓	Nitrate (NO_3)	5/16 FE	8.09	5/16 FE	0.07		✓				
✓	Nitrite (NO_2)	4/25 FE	0.03	4/25 FE	<0.01		✓				
✓	Ammonia (NH_3)	4/25 FE	0.12	4/25 FE	0.10		✓				
✓	Total Kjeldahl Nitrogen (N)	4/25 FE	0.38		0.178		✓				
✓	Phosphate (PO_4)	4/25 FE	0.05	4/25 FE	0.16		✓				
✓	Syndets (Apparent LAS)	5/16 FE	<0.1	5/16 FE	<0.1						
✓	TDS	5/16 FE	284	5/16 FE	328		✓				
	CO_2 (Field)		17		24		✓				
	Dissolved Oxygen (field)		1.6		2.5		✓				
	Pumping Depth										
	Standing Water (above pump)										
	Gallons Pumped										

R. K. KURIMOTO
MAY 14 1984

REMARKS: Results to D.P.G.

FORM 201 — Rev. 3/83 WS-235

CHECKED BY

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

ORATORY AME: DWP - Water Quality	REPORT PREPARED BY: (SIGNATURE) Fe Endey	DATE OF REPORT: 5-16-8
TEM E:		NUMBER: 0570
ELL NAME /OR NUMBER:	STATE WELL NUMBER:	
CRIPTION OF AMPLING POINT: Mc Bride (4898)		
AME OF PLER: CW Spangenberg	SAMPLER EMPLOYED BY: DWP	
TE/TIME AMPLE COLLECTED: 5-1-85	DATE/TIME SAMPLE RECEIVED @ LAB: 5-1-85	DATE ANALYSES COMPLETED: 5-6-85
T METHODS: 624 GC/MS	Were all the constituents listed below quantified? yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
enzene	ug/l	34030	ND	101.11
modichloromethane	ug/l	32101	ND	101.15
omoform	ug/l	32104	ND	101.15
omethane	ug/l	34413	ND	101.15
bon tetrachloride	ug/l	32102	ND	101.15
lorobenzene	ug/l	34301	ND	101.11
oroethane	ug/l	34311	ND	101.15
-Chloroethylvinyl ether	ug/l	34576	ND	101.15
oroform	ug/l	32106	ND	101.15
loromethane	ug/l	34418	ND	101.15
(2-Chloroethyl) ether	ug/l	34273	ND	1101.1
ibromochloromethane	ug/l	32105	ND	11.10
2-Dichlorobenzene	ug/l	34536	ND	101.15
3-Dichlorobenzene	ug/l	34566	ND	101.15
4-Dichlorobenzene	ug/l	34571	ND	101.15
hlorodifluoromethane	ug/l	34668	ND	1101.1
1-Dichloroethane	ug/l	34496	ND	101.15
2-Dichloroethane	ug/l	34531	ND	101.15
1-Dichloroethene	ug/l	34501	ND	101.12
ns-1,2-Dichloroethene	ug/l	34546	ND	101.15
2 Dichloropropane	ug/l	34541	ND	101.15
-1,3-Dichloropropene	ug/l	34704	ND	101.15

VOLATILE ORGANIC ANALYSES (Continued)

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
ns-1,3-Dichloropropene	ug/l	34699	ND	0.15
l benzene	ug/l	34371	ND	0.15
thylene chloride	ug/l	34423	ND	0.15
yl Ethyl Ketone	ug/l	81595	ND	1.0
thyl Isobutyl Ketone	ug/l	81596	ND	1.0
2,2-Tetrachloroethane	ug/l	34516	ND	0.15
trachloroethene	ug/l	34475	<0.15	0.15
ene	ug/l	34010	ND	0.1
1,1-Trichloroethane	ug/l	34506	ND	0.15
2-Trichloroethane	ug/l	34511	ND	0.15
ichloroethene	ug/l	39180	ND	0.15
chlorofluoromethane	ug/l	34488	ND	0.15
nyl chloride	ug/l	39175	ND	0.15
nes	ug/l	81551	ND	0.1

Note any unidentified peaks below

Isopicrin	ug/l	ND	5.0
DBCP	ug/l	ND	5.0
2,3 Trichloropropane	ug/l	ND	~~0.5~~
cis 1, 2 dichloroethene	ug/l	ND	0.5

SE 3
DLB-5

JAN 15 1985

O. J. ROGERS
JAN 15 1985

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

LABORATORY NAME: DWP - water Quality	REPORT PREPARED BY: (SIGNATURE) F Bordey	DATE OF REPORT: 1-10-85
SYSTEM NAME:		NUMBER: 05437
WELL NAME AND/OR NUMBER:		STATE WELL NUMBER:
DESCRIPTION OF SAMPLING POINT: Mc Bride (4898)		
NAME OF SAMPLER: Peter R.	SAMPLER EMPLOYED BY: DWP	
DATE/TIME SAMPLE COLLECTED: 12-20-84	DATE/TIME SAMPLE RECEIVED @ LAB: 12-20-84	DATE ANALYSES COMPLETED: 12-28-84
TEST METHODS: GC/MS	Were all the constituents listed below quantified? Yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
Benzene	ug/l	34030	ND	0.11
Bromodichloromethane	ug/l	32101	ND	0.15
Bromoform	ug/l	32104	ND	0.10
Bromomethane	ug/l	34413	ND	0.15
Carbon tetrachloride	ug/l	32102	ND	0.15
Chlorobenzene	ug/l	34301	ND	0.11
Chloroethane	ug/l	34311	ND	0.15
2-Chloroethylvinyl ether	ug/l	34576	ND	0.10
Chloroform	ug/l	32106	ND	0.15
Chloromethane	ug/l	34418	ND	0.15
Bis (2-Chloroethyl) ether	ug/l	34273	ND	0.1
Dibromochloromethane	ug/l	32105	ND	0.10
1,2-Dichlorobenzene	ug/l	34536	ND	0.15
1,3-Dichlorobenzene	ug/l	34566	ND	0.15
1,4-Dichlorobenzene	ug/l	34571	ND	0.15
Dichlorodifluoromethane	ug/l	34668	ND	0.1
1,1-Dichloroethane	ug/l	34496	ND	0.15
1,2-Dichloroethane	ug/l	34531	ND	0.15
1,1-Dichloroethene	ug/l	34501	ND	0.15
Trans-1,2-Dichloroethene	ug/l	34546	ND	0.15
1,2-Dichloropropane	ug/l	34541	ND	0.15
Cis-1,3-Dichloropropene	ug/l	34704	ND	0.15

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
s-1,3-Dichloropropene	ug/l	34699	ND	10 .15
hyl benzene	ug/l	34371	ND	10 .15
ylene chloride	ug/l	34423	ND	10 .15
thyl Ethyl Ketone	ug/l	81595	ND	10 .1
yl Isobutyl Ketone	ug/l	81596	ND	13 .10
1,2,2-Tetrachloroethane	ug/l	34516	ND	11 .10
rachloroethene	ug/l	34475	ND	10 .15
oluene	ug/l	34010	ND	10 .11
,1-Trichloroethane	ug/l	34506	ND	10 .15
,,2-Trichloroethane	ug/l	34511	ND	11 .10
chloroethene	ug/l	39180	ND	10 .15
chlorofluoromethane	ug/l	34488	ND	10 .15
inyl chloride	ug/l	39175	ND	10 .15
enes	ug/l	81551	ND	10 .11

Note any unidentified peaks below

Chloropicrin	ug/l	ND	5.0
DBCP	ug/l	ND	5.0

JEFF DOBROWOLSKI
MAR 31 1986

MAR 26 1986

M. Thun 3-25-86

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

MAR 26 1986
Shirley Cheng

ORATORY: DWP- Water Quality	REPORT PREPARED BY: (SIGNATURE) J. Bordey	DATE OF REPORT: 3-24-86
EM:		NUMBER: 05836
L NAME OR NUMBER:	STATE WELL NUMBER:	
RIPTION OF PLING POINT: Janss Well (4897)		
OF LER: JGD	SAMPLER EMPLOYED BY: DWP	
TE/TIME PLE COLLECTED: 3-11-86	DATE/TIME SAMPLE RECEIVED @ LAB: 3-11-86	DATE ANALYSES COMPLETED: 3-14-86
OF METHODS: 624 GC/MS	Were all the constituents listed below quantified? Yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
nzene	ug/l	34030	01.1	01.1
odichloromethane	ug/l	32101	N D	01.5
oform	ug/l	32104	N D	01.5
omethane	ug/l	34413	N D	01.5
bon tetrachloride	ug/l	32102	N D	01.5
lorobenzene	ug/l	34301	N D	01.1
oroethane	ug/l	34311	N D	01.5
Chloroethylvinyl ether	ug/l	34576	N D	01.5
oroform	ug/l	32106	N D	01.5
loromethane	ug/l	34418	N D	01.5
(2-Chloroethyl) ether	ug/l	34273	N D	1.10
bromochloromethane	ug/l	32105	N D	01.5
2-Dichlorobenzene	ug/l	34536	N D	01.5
3-Dichlorobenzene	ug/l	34566	N D	01.5
4-Dichlorobenzene	ug/l	34571	N D	01.5
chlorodifluoromethane	ug/l	34668	N D	21.0
1-Dichloroethane	ug/l	34496	N D	01.5
2-Dichloroethane	ug/l	34531	N D	01.5
1-Dichloroethene	ug/l	34501	N D	01.2
ans-1,2-Dichloroethene	ug/l	34546	N D	01.5
-Dichloropropane	ug/l	34541	N D	01.5
s-1,3-Dichloropropene	ug/l	34704	N D	01.5

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
is-1,3-Dichloropropene	ug/l	34699	ND	01.15
hyl benzene	ug/l	34371	ND	01.15
hylene chloride	ug/l	34423	ND	01.15
thyl Ethyl Ketone	ug/l	81595	ND	5.10
hyl Isobutyl Ketone	ug/l	81596	ND	1.10
1,2,2-Tetrachloroethane	ug/l	34516	ND	01.15
rachloroethene	ug/l	34475	ND	01.15
luene	ug/l	34010	01.17	01.11
,1-Trichloroethane	ug/l	34506	01.19	01.15
_,2-Trichloroethane	ug/l	34511	ND	01.15
chloroethene	ug/l	39180	ND	01.15
chlorofluoromethane	ug/l	34488	ND	01.15
nyl chloride	ug/l	39175	ND	01.15
enes	ug/l	81551	ND	01.11
is 1,2 dichloroethene	ug/l		ND	0.5
1,2,3 Trichloropropane	ug/l		ND	0.5

JEFF DOBROWOLSKI
FEB 19 1986

U. J. ROGERS
FEB 1 8 1986

Shirley Cheng
[illegible] 1986

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

[LABOR]ATORY DWP- Water Quality	REPORT PREPARED BY: (SIGNATURE) K. Bordey	DATE OF REPORT: 2-18-86
		NUMBER: 05784
NAME [WELL] NUMBER:		STATE WELL NUMBER:
[DESCR]IPTION OF [SAMP]LING POINT: Sheldon Arleta 4897		
[NAME] OF [SAMPL]ER: J. Dobrowolski		SAMPLER EMPLOYED BY: DWP
[DATE]/TIME [SAMPL]E COLLECTED: 2/11/86	DATE/TIME SAMPLE RECEIVED @ LAB: 2-11-86	DATE ANALYSES COMPLETED: 2-13-86
[TEST] METHODS: 624 GC/MS	Were all the constituents listed below quantified? yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
[Ben]zene	ug/l	34030	2.2	0.1
[Bromo]dichloromethane	ug/l	32101	ND	0.5
[Bro]moform	ug/l	32104	ND	0.5
[Brom]omethane	ug/l	34413	ND	0.5
[Car]bon tetrachloride	ug/l	32102	ND	0.5
[Chlo]robenzene	ug/l	34301	ND	0.1
[Chl]oroethane	ug/l	34311	ND	0.5
[2-C]hloroethylvinyl ether	ug/l	34576	ND	0.5
[Chl]oroform	ug/l	32106	ND	0.5
[Ch]loromethane	ug/l	34418	ND	0.5
[Bis] (2-Chloroethyl) ether	ug/l	34273	ND	5.0
[Di]bromochloromethane	ug/l	32105	ND	0.5
[1,2]-Dichlorobenzene	ug/l	34536	8.6	0.5
[1,]3-Dichlorobenzene	ug/l	34566	1.7	0.5
[1,4]-Dichlorobenzene	ug/l	34571	18.1	0.5
[Di]chlorodifluoromethane	ug/l	34668	ND	2.0
[1,]1-Dichloroethane	ug/l	34496	ND	0.5
[1,]2-Dichloroethane	ug/l	34531	ND	0.5
[1,]1-Dichloroethene	ug/l	34501	ND	0.2
[Tr]ans-1,2-Dichloroethene	ug/l	34546	ND	0.5
[1,]2-Dichloropropane	ug/l	34541	ND	0.5
[Ci]s-1,3-Dichloropropene	ug/l	34704	ND	0.5

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
ns-1,3-Dichloropropene	ug/l	34699	ND	10.15
thyl benzene	ug/l	34371	3.14	10.15
ylene chloride	ug/l	34423	ND	10.15
thyl Ethyl Ketone	ug/l	81595	ND	5.10
hyl Isobutyl Ketone	ug/l	81596	ND	1.10
,2,2-Tetrachloroethane	ug/l	34516	ND	10.15
rachloroethene	ug/l	34475	ND	10.15
uene	ug/l	34010	2.71	10.11
,1-Trichloroethane	ug/l	34506	ND	10.15
,2-Trichloroethane	ug/l	34511	ND	10.15
chloroethene	ug/l	39180	ND	10.15
chlorofluoromethane	ug/l	34488	ND	10.15
nyl chloride	ug/l	39175	ND	10.15
enes	ug/l	81551	7.10	10.11
is 1,2 dichloroethene	ug/l		ND	0.5
1,2,3 Trichloropropane	ug/l		ND	0.5

SES-S
DLB-S

Carl Shangenberg MAY 20 1985 Shirley Cheng MAY 20 1985

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

ORATORY AME: DWP- Water Quality	REPORT PREPARED BY: (SIGNATURE) K Bradley	DATE OF REPORT: 5-16-8
STEM E:		NUMBER: 105706
ELL NAME D/OR NUMBER:		STATE WELL NUMBER:
SCRIPTION OF AMPLING POINT: Janns 1897		
AME OF MPLER: CW Spangenberg		SAMPLER EMPLOYED BY: DWP
TE/TIME AMPLE COLLECTED: 5-1-85	DATE/TIME SAMPLE RECEIVED @ LAB: 5-1-85	DATE ANALYSES COMPLETED: 5-6-85
ST METHODS: 624 GC/MS		Were all the constituents listed below quantified? Yes

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
enzene	ug/l	34030	101.12	101.11
omodichloromethane	ug/l	32101	ND	101.15
omoform	ug/l	32104	ND	101.15
omomethane	ug/l	34413	ND	101.15
rbon tetrachloride	ug/l	32102	ND	101.15
hlorobenzene	ug/l	34301	ND	101.11
loroethane	ug/l	34311	ND	101.15
-Chloroethylvinyl ether	ug/l	34576	ND	101.15
loroform	ug/l	32106	ND	101.15
hloromethane	ug/l	34418	ND	101.15
s (2-Chloroethyl) ether	ug/l	34273	ND	1101.1
ibromochloromethane	ug/l	32105	ND	11.10
2-Dichlorobenzene	ug/l	34536	ND	101.15
,3-Dichlorobenzene	ug/l	34566	ND	101.15
4-Dichlorobenzene	ug/l	34571	ND	101.15
chlorodifluoromethane	ug/l	34668	ND	1101.1
1-Dichloroethane	ug/l	34496	ND	101.15
2-Dichloroethane	ug/l	34531	ND	101.15
,1-Dichloroethene	ug/l	34501	ND	101.12
ans-1,2-Dichloroethene	ug/l	34546	ND	101.15
,2-Dichloropropane	ug/l	34541	ND	101.15
s-1,3-Dichloropropene	ug/l	34704	ND	101.15

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
-1,3-Dichloropropene	ug/l	34699	ND	0.15
l benzene	ug/l	34371	ND	0.15
lene chloride	ug/l	34423	<0.15	0.15
yl Ethyl Ketone	ug/l	81595	ND	1.0
yl Isobutyl Ketone	ug/l	81596	ND	1.0
2,2-Tetrachloroethane	ug/l	34516	ND	0.15
achloroethene	ug/l	34475	ND	0.15
ene	ug/l	34010	ND	0.1
1-Trichloroethane	ug/l	34506	ND	0.15
2-Trichloroethane	ug/l	34511	ND	0.15
chloroethene	ug/l	39180	ND	0.15
hlorofluoromethane	ug/l	34488	ND	0.15
yl chloride	ug/l	39175	ND	0.15
nes	ug/l	81551	ND	0.1

Note any unidentified peaks below

Chloropicrin	ug/L	ND	5.0
BCP	ug/L	ND	5.0
1,2,3 Trichloropropane	ug/L	ND	0.5
cis 1, 2 dichloroethene	ug/L	ND	0.5

SL SD
DLB-5/E

WATER QUALITY DIVISION
LAB REPORT OF ANALYSIS

...ROGERS
JUL 10 1985

Results in mg/l unless otherwise indicated

Sample No	Date Taken	Date Rec'd	Collector	Description
-1322	5-1-85	5-1-85	CWS	Janns Well (4897)
5-1323	"	"	"	McBride II (4898)

JUL 10 1985

Sample No.		5-1322		5-1323									
		Date Anal		Date Anal		Date Anal		Date Anal		Date Anal		Date Anal	
	Temperature °C Field												
✓	Temperature °C Lab	5/1	24		24								
✓	Turbidity (JTU Units)	5/1	36		0.8								
✓	Color (Apparent Units)	5/1	70+		3								
✓	Odor (Threshold)	6/1	Ep 2.0		Ch 1.4								
	pH (Field)												
✓	pH (Lab)	5/1	7.3		7.3								
✓	Specific Elect. Cond.	5/1	687		700								
✓	DO (Lab)	5/1	2.1		4.8								
	DO (Field)												
✓	BOD_5	5/6	6.6		5.0								
✓	COD	5/7	13.		23								
✓	SOC	6/3	1.3	Ch	1.1								
	Alkalinity												
✓	Total Alkalinity (as $CaCO_3$)	5/1	320		320								
✓	Hydroxide (as $CaCO_3$)	5/1	0		0								
✓	Carbonate (as $CaCO_3$)	5/1	0		0								
✓	Bicarbonate (as $CaCO_3$)	5/1	320		320								
✓	Chloride (Cl)	5/1	140		70								
✓	Sulfate (SO_4)	5/16	23	5/16	23								
✓	Phosphate (P)	5/6	0.05	5/6	0.08								
✓	Nitrate (N)	5/6	0.12	5/6	0.83								
✓	Nitrite (N)	5/1	.004		.003								
✓	Ammonia (N)	5/1	.22		.01								
✓	Total Kjeldahl Nitrogen (N)	5/1	.38		.08								
✓	Surfactants (MBAS)	5/6	<.05	Ch	<.05								
✓	Sodium (Na)	6/5	18	6/5	37								
✓	Calcium (Ca)	5/1	6		9								
✓	Magnesium (Mg)	5/1	17		7.1								
✓	Potassium (K)	6/5	3.2	6/5	5.4								

R. K. KURIMOTO
JUL 10 1985

REMARKS: Return Results to Carl Spangenberg

O. J. ROGERS
MAY 30 1986

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

BORATORY NAME: DWP- Water Quality	REPORT PREPARED BY: (SIGNATURE) J. Bradley	DATE OF REPORT: 5-28-
STEM ME:		NUMBER: 05101
LL NAME ND/OR NUMBER:		STATE WELL NUMBER:
SCRIPTION OF MPLING POINT: Wicki Well		
AME OF MPLER: JGD		SAMPLER EMPLOYED BY: DWP
TE/TIME SAMPLE COLLECTED: 5-7-86	DATE/TIME SAMPLE RECEIVED @ LAB: 5-7-86	DATE ANALYSES COMPLETED: 5-9-86
ST METHODS: 624 GC/MS		Were all the constituents listed below quantified? Yes

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
enzene	ug/l	34030	101.13	101.1
Bromodichloromethane	ug/l	32101	ND	101.15
romoform	ug/l	32104	ND	101.15
Bromomethane	ug/l	34413	ND	101.15
arbon tetrachloride	ug/l	32102	ND	101.15
Chlorobenzene	ug/l	34301	ND	101.11
hloroethane	ug/l	34311	ND	101.15
2-Chloroethylvinyl ether	ug/l	34576	ND	101.15
hloroform	ug/l	32106	ND	10,.15
hloromethane	ug/l	34418	ND	101.15
his (2-Chloroethyl) ether	ug/l	34273	ND	151.10
ibromochloromethane	ug/l	32105	ND	101.15
1,2-Dichlorobenzene	ug/l	34536	ND	101.15
,3-Dichlorobenzene	ug/l	34566	ND	101.15
1,4-Dichlorobenzene	ug/l	34571	191.12	101.15
ichlorodifluoromethane	ug/l	34668	ND	121.10
1,1-Dichloroethane	ug/l	34496	ND	101.15
1,2-Dichloroethane	ug/l	34531	ND	101.15
1,1-Dichloroethene	ug/l	34501	ND	101.12
trans-1,2-Dichloroethene	ug/l	34546	ND	101.15
1,2-Dichloropropane	ug/l	34541	ND	101.15
cis-1,3-Dichloropropene	ug/l	34704	ND	101.15

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
...ns-1,3-Dichloropropene	ug/l	34699	ND	10.15
...yl benzene	ug/l	34371	ND	10.15
...thylene chloride	ug/l	34423	ND	10.15
...hyl Ethyl Ketone	ug/l	81595	ND	5.10
...thyl Isobutyl Ketone	ug/l	81596	ND	1.10
...,2,2-Tetrachloroethane	ug/l	34516	ND	10.15
...trachloroethene	ug/l	34475	ND	10.15
...uene	ug/l	34010	ND	10.11
...,1,1-Trichloroethane	ug/l	34506	ND	10.15
...,2-Trichloroethane	ug/l	34511	ND	10.15
...richloroethene	ug/l	39180	ND	10.15
...chlorofluoromethane	ug/l	34488	ND	10.15
...nyl chloride	ug/l	39175	ND	10.15
...enes	ug/l	81551	ND	10.11
cis 1, 2 dichloroethene	ug/L		ND	0.5
1, 2, 3 Trichloropropane	ug/L		ND	0.5

JEFF DOBROWOLSKI
MAR 31 1986

O. J. ROGERS
MAR 26 1986

3-28-86
MAR 26 1986
Shirley Cheng

PURGEABLE ORGANIC ANALYSES
(VOLATILES)

ORATORY NME: DWP- Water Quality	REPORT PREPARED BY: (SIGNATURE) K Bradley	DATE OF REPORT: 3-24-8
TEM E:		NUMBER: 05838
ELL NAME D/OR NUMBER:	STATE WELL NUMBER:	
CRIPTION OF MPLING POINT: Wicks Well 4897A		
ME OF PLER: JGD	SAMPLER EMPLOYED BY: DWP	
TE/TIME MPLE COLLECTED: 3-11-86	DATE/TIME SAMPLE RECEIVED @ LAB: 3-11-86	DATE ANALYSES COMPLETED: 3-17-86
ST METHODS: 624 GC/MS	Were all the constituents listed below quantified? Yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
nzene	ug/l	34030	01.17	01.11
romodichloromethane	ug/l	32101	ND	01.15
omoform	ug/l	32104	01.18	01.15
Bromomethane	ug/l	34413	ND	01.15
rbon tetrachloride	ug/l	32102	ND	01.15
Chlorobenzene	ug/l	34301	01.12	01.11
loroethane	ug/l	34311	ND	01.15
2-Chloroethylvinyl ether	ug/l	34576	ND	01.15
hloroform	ug/l	32106	ND	01.15
hloromethane	ug/l	34418	ND	01.15
is (2-Chloroethyl) ether	ug/l	34273	ND	51.10
ibromochloromethane	ug/l	32105	ND	01.15
1,2-Dichlorobenzene	ug/l	34536	11.10	01.15
,3-Dichlorobenzene	ug/l	34566	ND	01.15
1,4-Dichlorobenzene	ug/l	34571	71.15	01.15
ichlorodifluoromethane	ug/l	34668	ND	21.10
1,1-Dichloroethane	ug/l	34496	ND	01.15
1,2-Dichloroethane	ug/l	34531	ND	01.15
1,1-Dichloroethene	ug/l	34501	ND	01.12
trans-1,2-Dichloroethene	ug/l	34546	ND	01.15
?-Dichloropropane	ug/l	34541	ND	01.15
cis-1,3-Dichloropropene	ug/l	34704	ND	01.15

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
ns-1,3-Dichloropropene	ug/l	34699	ND	0.15
yl benzene	ug/l	34371	ND	0.15
hylene chloride	ug/l	34423	ND	0.15
hyl Ethyl Ketone	ug/l	81595	ND	5.0
hyl Isobutyl Ketone	ug/l	81596	ND	1.0
,2,2-Tetrachloroethane	ug/l	34516	ND	0.15
trachloroethene	ug/l	34475	ND	0.15
uene	ug/l	34010	ND	0.11
,1,1-Trichloroethane	ug/l	34506	ND	0.15
,2-Trichloroethane	ug/l	34511	0.16	0.15
richloroethene	ug/l	39180	ND	0.15
chlorofluoromethane	ug/l	34488	ND	0.15
inyl chloride	ug/l	39175	ND	0.15
lenes	ug/l	81551	ND	0.11
cis 1,2 dichloroethene	ug/L		ND	0.5
1,2,3 Trichloropropane	ug/L		ND	0.5

JAN 09 1985

O. J. ROGERS
JAN 07 1985

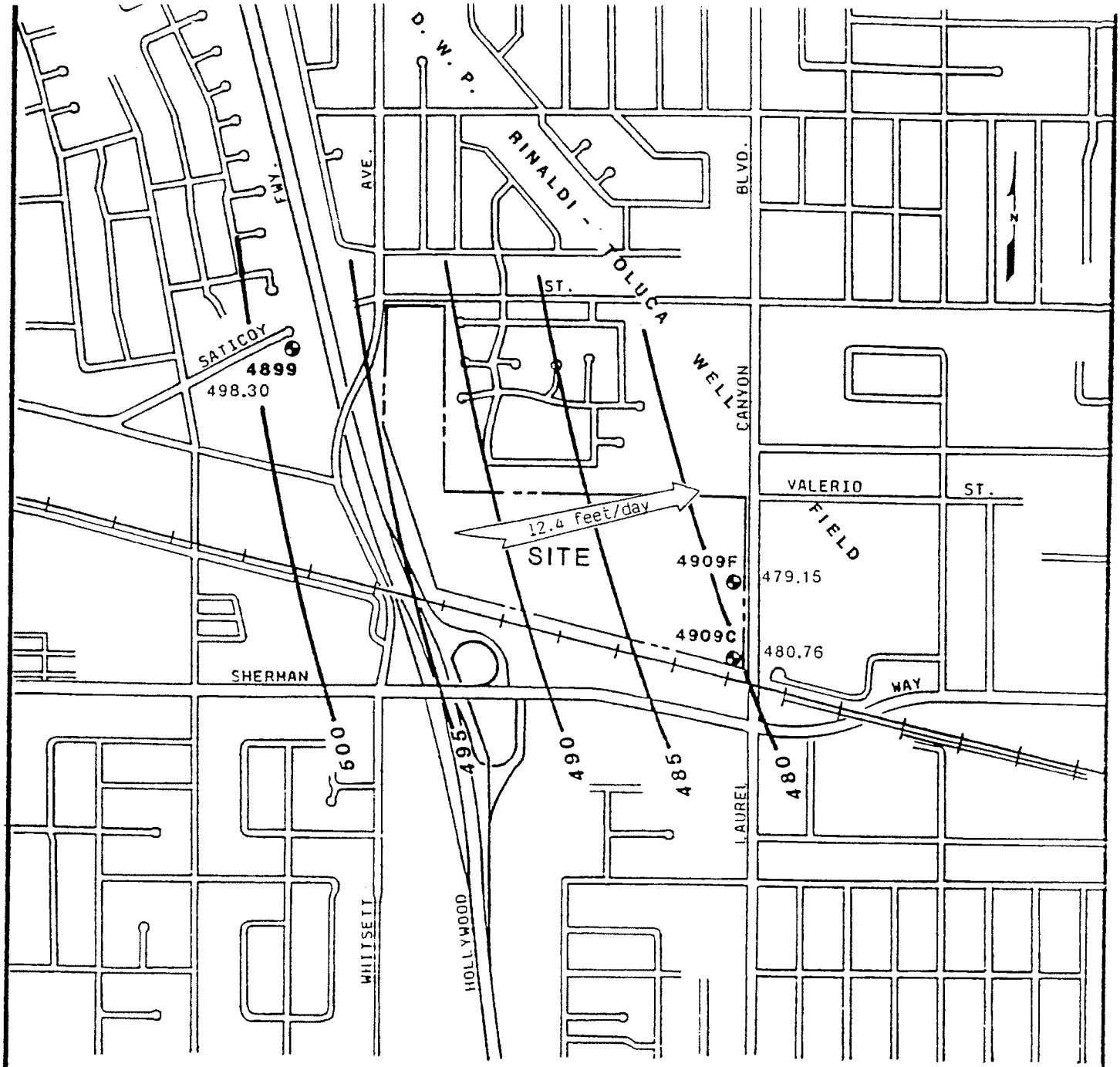
PURGEABLE ORGANIC ANALYSES
(VOLATILES)

LABORATORY NAME: DWP - Water Quality	REPORT PREPARED BY: (SIGNATURE) J. J Bailey	DATE OF REPORT: 12-18-84
SYSTEM NAME:		NUMBER: 05415
WELL NAME AND/OR NUMBER:	STATE WELL NUMBER:	
DESCRIPTION OF SAMPLING POINT: Wicks well 4897A		
NAME OF SAMPLER: C W Spangler	SAMPLER EMPLOYED BY: DWP	
DATE/TIME SAMPLE COLLECTED: 12-12-84	DATE/TIME SAMPLE RECEIVED @ LAB: 12-12-84	DATE ANALYSES COMPLETED: 12-13-84
TEST METHODS: GC/MS	Were all the constituents listed below quantified? Yes	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
nzene	ug/l	34030	<1.1	
modichloromethane	ug/l	~~33101~~ 32101	ND	
moform	ug/l	32104	ND	
momethane	ug/l	34413	ND	
bon tetrachloride	ug/l	32102	ND	
lorobenzene	ug/l	34301	<1.1	
oroethane	ug/l	34311	ND	
-Chloroethylvinyl ether	ug/l	34576	ND	
oroform	ug/l	32106	ND	
loromethane	ug/l	34418	ND	
(2-Chloroethyl) ether	ug/l	34273	ND	
bromochloromethane	ug/l	32105	ND	
-Dichlorobenzene	ug/l	34536	<1.1	
-Dichlorobenzene	ug/l	34566	ND	
-Dichlorobenzene	ug/l	34571	91.1	
hlorodifluoromethane	ug/l	34668	ND	
1-Dichloroethane	ug/l	34496	ND	
-Dichloroethane	ug/l	34531	ND	
1-Dichloroethene	ug/l	34501	ND	
ns-1,2-Dichloroethene	ug/l	34546	ND	
-Dichloropropane	ug/l	34541	ND	
-1,3-Dichloropropene	ug/l	34704	ND	

CONSTITUENT	REPORTING UNITS	STORET CODE	ANALYSES RESULTS	DETECTION LIMIT
-1,3-Dichloropropene	ug/l	34699	N D	
l benzene	ug/l	34371	N D	
lene chloride	ug/l	34423	<1 1.	
yl Ethyl Ketone	ug/l	81595	N D	
l Isobutyl Ketone	ug/l	81596	N D	
,2,2-Tetrachloroethane	ug/l	34516	N D	
chloroethene	ug/l	34475	N D	
ene	ug/l	34010	N D	
-Trichloroethane	ug/l	34506	N D	
2-Trichloroethane	ug/l	34511	N D	
chloroethene	ug/l	39180	N D	
hlorofluoromethane	ug/l	34488	N D	
yl chloride	ug/l	39175	N D	
nes	ug/l	81551	<1 1.	

Note any unidentified peaks below



EXPLANATION

4909C — MONITORING WELL LOCATION AND NUMBER

500 — LINE OF EQUAL GROUND WATER ELEVATION IN FEET ASL

498.30 — GROUND WATER ELEVATION IN FEET ASL

GROUND WATER FLOW DIRECTION AND VELOCITY

BASE MAP MODIFIED FROM U. S. GEOLOGICAL SURVEY 7.5 MINUTE VAN NUYS TOPOGRAPHIC QUADRANGLE, 1972.

0 1000
FEET

GROUND WATER CONTOURS

FEBRUARY 1989

FIGURE 1

LAW ENVIRONMENTAL, INC.

PROJECT No. SB-2052 DATE 06-09-89 PROJ. MGR. AC DFTR. CM

APPENDIX C

WELL TEST DATA

WELL TEST DATA

Project No.: 58-7057 Well No.: SECOND DOWNGRADE WELL

Date of Test: 12/17/97 Static Water Level: 252.3 feet

Time	t	t'	t/t'	h	h'	Q	Remarks
	0			252.3			Turn on Pump
	0.5			252.3	0	200	clean water
	1			252.3	0		
	2			253.5	1.2		
	3			253.5	1.2		
	4			253.5	1.2		
	5			253.5	1.2		
	6			253.5	1.2		
	7			253.5	1.2		
	8			253.5	1.2		
	9			253.5	1.2		
	10			253.5	1.2		
	16			253.5	1.2		
	22			253.5	1.2		
	30			253.5	1.2		
	35			253.5	1.2		
	40			253.5	1.2		
	45			253.5	1.2		
	50			253.5	1.2		
	55			253.5	1.2		
	60			253.5	1.2		T = 60°F
	70			253.5	1.2		
	80			253.5	1.2		
	90			253.5	1.2		
	100			253.5	1.2		clear water
	110			253.5	1.2		
	120			253.5	1.2		
	130			253.5	1.2	200	
	150			253.5	1.2		SHUT PUMP OFF

LAW ENVIRONMENTAL, INC.
3420 NORTH SAN FERNANDO BLVD.
SUITE 200
BURBANK, CA 91504-2569
818-848-0214

JOB NO. 58-7057 SHEET 1 OF 1

JOB NAME _____

BY _____ DATE _____

CHECKED BY _____ DATE _____

$$T = \frac{1440\,Q}{\Delta S}$$

$\Delta S = 1.2$

$Q = 200$ gal/min.

$T = (1440)(200/1.2') = 240{,}000$ gal/ft/day

$\div 7.48$ gal/CF $= 32{,}085$ ft²/day

$K = \frac{T}{b}$

$b = 252.3 - 348 = 957$ say 100'

$K = 320.8$ ft/day

$V = \frac{Ki}{S(=.20} = 320 * \frac{20}{4600} / .20 = 6.97$ say 7 ft/day

APPENDIX D

PERMEABILITY CALCULATIONS

COMPLETION REPORT
CONSTRUCTION OF UPGRADIENT MONITORING WELL NO. 1
HEWITT LANDFILL, NORTH HOLLYWOOD DISTRICT
LOS ANGELES COUNTY, CALIFORNIA
FOR
VALLEY RECLAMATION COMPANY

February 12, 1985

Valley Reclamation Company
3200 San Fernando Road
Los Angeles, California 90065 (Our Job No. E-81001)

Attention: Mr. George Cosby

Gentlemen:

Correction of Completion Report Dated 01-03-85
Construction of Upgradient Monitoring Well No. 1
Hewitt Landfill, North Hollywood District,
Los Angeles County, California, For Valley Reclamation

It has been called to our attention that there was an error on Page 5 of the subject completion report. The error has been corrected, and corrected copies of the page are enclosed for insertion in your report copies.

Please accept our apologies for this error and the resulting inconvenience.

Respectfully submitted,

LeROY CRANDALL AND ASSOCIATES

by Alice M Campbell
Alice M. Campbell, C.E.G. 1157
Senior Staff Geologist

by Glenn A Brown
Glenn A. Brown, C.E.G. 3
Director of Geological Services

GAB:AC/jj6cc
Enclosures
(5 copies submitted)

cc: Los Angeles Regional Water Quality Control Board
Attn: Mr. Dick Harris
Los Angeles Department of Water and Power
Attn: Mr. Mel Blevins
Attn: Mr. Tom Gibson
Los Angeles Bureau of Sanitation
Attn: Ms. Sheila Molyneux

January 3, 1985

Valley Reclamation Company
3200 San Fernando Road
Los Angeles, California 90065 (Our Job No. E-81001)

Attention: Mr. George Cosby

Gentlemen:

Submitted herewith is our completion report for the new upgradient well. The report contains a description of well construction details and alluvial materials beneath the well site.

Respectfully Submitted,

LeROY CRANDALL AND ASSOCIATES

by Alice M Campbell
Alice M. Campbell, C.E.G. 1157
Senior Staff Geologist

by Glenn A Brown
Glenn A. Brown, C.E.G. 3
Director of Geological Services

GAB:AC/jj4r
(5 copies submitted)

cc: Los Angeles Regional Water Quality Control Board
Attn: Mr. Dick Harris
Los Angeles Department of Water and Power
Attn: Mr. Mel Blevins
Attn: Mr. Tom Gibson
Los Angeles Bureau of Sanitation
Attn: Ms. Sheila Molyneux

COMPLETION REPORT

CONSTRUCTION OF UPGRADIENT MONITORING WELL NO. 1

HEWITT LANDFILL, NORTH HOLLYWOOD DISTRICT

LOS ANGELES COUNTY, CALIFORNIA

FOR

VALLEY RECLAMATION COMPANY

INTRODUCTION

This report describes the construction of the Hewitt Landfill upgradient Monitoring Well No. 1. The monitoring well is designed and located to allow measurement of ground water quality upgradient of the closed Hewitt Landfill facility, and to provide background water level data. The monitoring well is placed to allow detection of any ground water degradation from upgradient sources. Plate 1, Well Location Map, shows the location of the monitoring well with respect to the Hewitt site. The well is located in the southern parkway of the North Saticoy Street cul-de-sac, approximately 100 feet west of the Hollywood Freeway.

CHRONOLOGY OF WORK

All work pertaining to the location and construction of the well was carried out in accordance with the design details prepared for the well by our office. All work related to construction and development of the wells was conducted by Howard Pump Company of Barstow, California, under the observation of LeRoy Crandall and Associates. The work was carried out between October 29 and November 1, 1984.

WELL CONSTRUCTION AND DEVELOPMENT

The mud rotary drilling method was used to construct the monitoring well. The well was constructed by drilling a 12¼-inch borehole to design depth. An Electric Log of the well was made after borehole drilling and prior to casing installation. An 8-5/8 inch outer diameter steel casing was placed in the borehole. The well casing is perforated in the lower 160 feet with milled slots. The annular area of the borehole was backfilled with rounded, clean pea gravel (3/8-inch) to 10 feet above the perforations. A layer of bentonite pellets was installed over the gravel pack. The remaining annular area was sealed with a lean concrete mix from the top of the bentonite to ground surface. Table 1 contains pertinent well construction information. Plate 2, Well Construction Details, illustrates the construction details of the monitoring well. Appendix A contains the E-Log, Water Well Drillers Report and Test Pump Data.

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS

MW No.	Ground Surface Elevation	Borehole Depth (ft.)	Casing* Depth (ft.)	Casing Perforated** From	Casing Perforated** To	Gravel Packed From	Gravel Packed To	Sealed From	Sealed To
1	769	290	290	120	280	110	290	0	110

NOTE: (*) All casing 8-5/8-inch O.D. steel casing. (**) Casing perforated with 3/32 x 2-1/2-inch milled slots, 18 slots per foot. (MW) Monitoring Well.

The well was developed by pumping at rates up to 100 gpm with an electric submersible pump. The well was pumped first for 6½ hours, and then for 30 hours. At the end of the development phase, water samples were collected. At the time of sampling, the water was clear.

TABLE 2
MINERAL QUALITY OBJECTIVES FOR GROUND WATERS

San Fernando Subunit:	Objective (mg/l) TDS	Sulfate	Chloride	Boron
North Hollywood-Burbank Area:	600	250	100	1.5
Monitoring Well Water Quality:				
Well No. 1	420	220	22	---

The general mineral quality in the vicinity of he Hewitt Landfill is within the RWQCB objectives. The water is a calcium bicarbonate type with high (300 ppm) total hardness. The pH is slightly alkaline and total dissolved solids are moderate.

Organic

The RWQCB has not yet established organic compound objectives for water in the San Fernando Valley. However, the EPA has made available water quality criteria for some toxic pollutants. At a 1 per million risk level, the EPA exposure estimates are shown in the following table.

TABLE 3
EPA WATER QUALITY CRITERIA - 45 FR 79318
(10^{-6} Risk Level)

TCE	2.7 ug/l
PCE	0.8 ug/l
Carbon Tetrachloride	0.40 ug/l
1, 2, DCA	0.94 ug/l

TABLE 4
SUMMARY OF TCE AND PCE DATA
October, 1984
(ug/l)

	Brown and Caldwell	Department of Health Services
Well:	#1	#1
PCE	3	--
TCE	0	--
All Other	31	25

Using these figures as guidance, the ground water upgradient of the closed Hewitt Landfill could be considered marginally suitable for drinking without treatment.

In addition to the constituents already named, other compounds are present which indicate ground water contamination. These compounds include petroleum hydrocarbons, xylenes, benzene, and toluene. These compounds are found in gasoline and diesel fuel. The levels of these compounds vary from less than 1 ug/l to over 20 ug/l (total) in the new monitoring well.

CONCLUSIONS

1) On the basis of our observation of well construction, the well was completed as designed. No unusual or unexpected geologic conditions were encountered during drilling. The well should, therefore, be suitable its intended purpose as a monitoring well.

2) Evidence of contamination of ground water was obtained from the well. The type of contamination indicates that the source is probably aged gasoline and industrial solvents, and that the sources are located upgradient of the Hewitt Landfill.

-oOo-

The following are attached and complete this report.

Plate 1 . . . . . Well Location Map

Plate 2 . . . . . Well Construction Details

Appendix A . . . . . Well Drilling Data

. . . . . E-Log

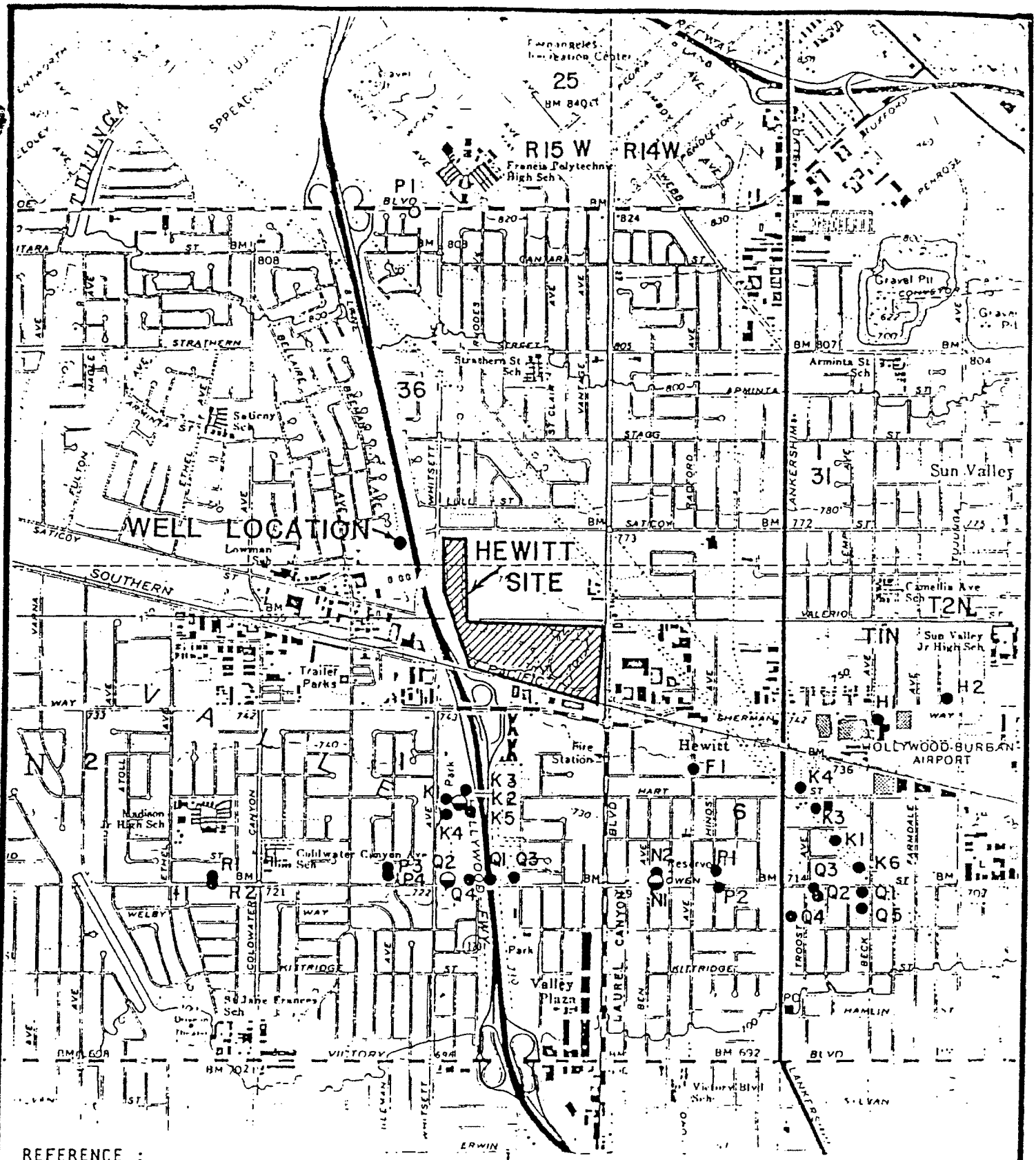
. . . . . Water Well Drillers Report

. . . . . Test Pump Data

Appendix B . . . . . Water Quality Data

. . . . . Water Quality Analyses - Brown & Caldwell Laboratories

. . . . . Water Quality Analyses - California Department of Health Services Laboratory



REFERENCE :

BASE MAP U.S.G.S. 7.5' QUADRANGLE VAN NUYS 1966, PHOTOREVISED, 1972.

EXPLANATION :

- ● WELL
- ⬮ WELL WITH HYDROGRAPH OR WATER QUALITY DATA

N

0 2000 4000

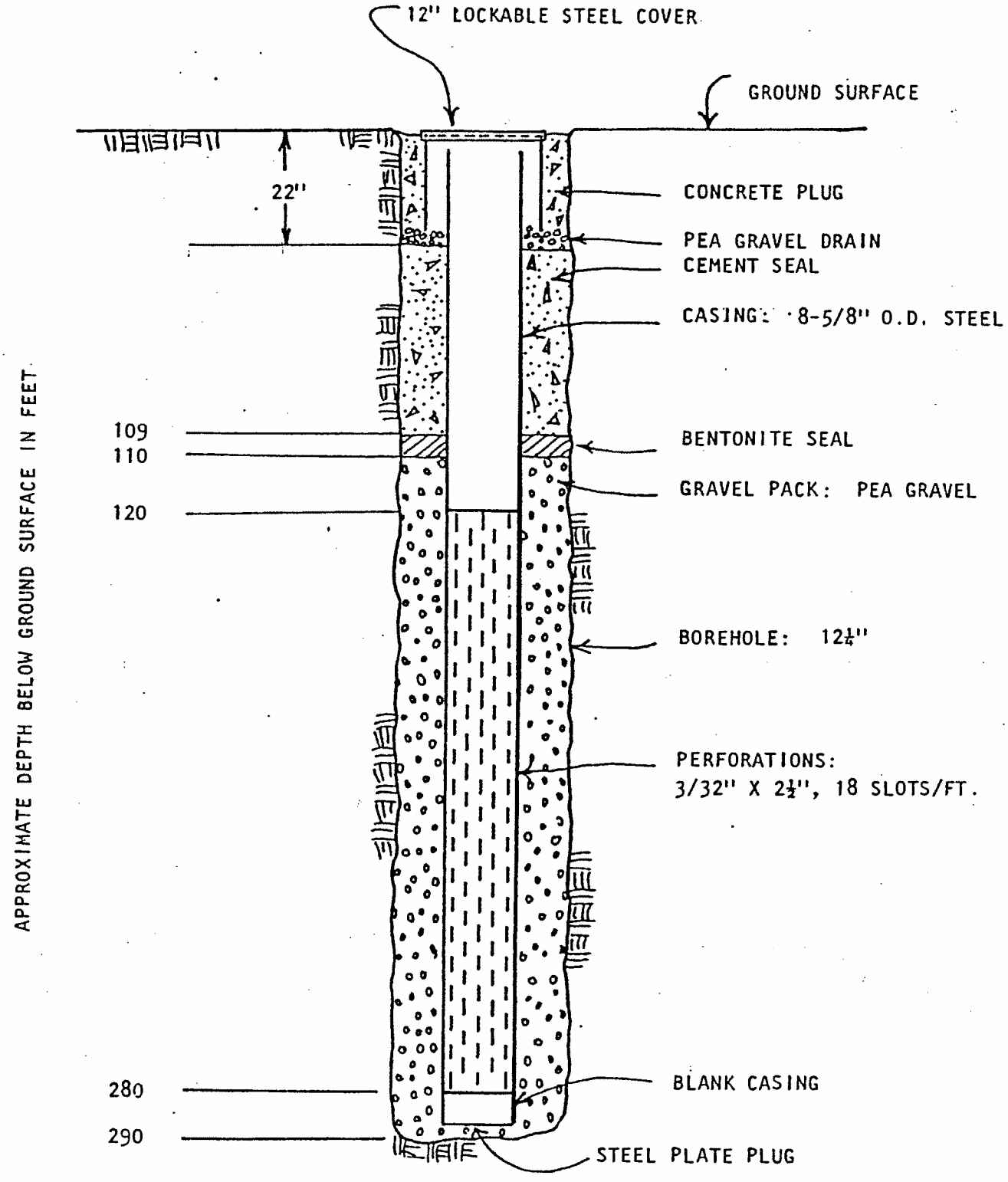
SCALE IN FEET

WELL LOCATION MAP

LeROY CRANDALL AND ASSOCIATES

PLATE 1

NOT TO SCALE



CONSTRUCTION DETAILS
HEWITT MONITORING WELL No.1

LeROY CRANDALL AND ASSOCIATES

PLATE 2

Appendix A

ORIGINAL
[illegible]e with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 241871

N[illegible] of Intent No. Customer
[illegible]al Permit No. or Date Customer

State Well No.
Other Well No.

(1) OWNER: Name Valley Reclamation
[illegible]ress 3200 San Fernando Rd.
[illegible]y Los Angeles, Calif 90069 Zip

(2) LOCATION OF WELL (See instructions):
County ____ Owner's Well Number ____
[illegible]ll address if different from above Hewitt Monit. Well
[illegible]wnship ____ Range ____ Section ____
Distance from cities, roads, railroads, fences, etc. ____

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☐
Municipal ☐
Other Monitoring ☒

[illegible] EQUIPMENT:
[illegible]otary ☒ Reverse ☐
[illegible] ☐ Air ☐
[illegible] ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size
Diameter of bore 12"
Packed from 100 to 290 ft.

[illegible] CASING INSTALLED:
[illegible] ☒ Plastic ☐ Concrete ☐

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage of Wall	From ft.	To ft.	Slot size
0	120	8"		220	280	
280	290					

[illegible] WELL SEAL:
[illegible] surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 100 ft.
[illegible] strata sealed against pollution? Yes ☐ No ☐ Interval ____ ft.
[illegible]thod of sealing ____

[illegible] WATER LEVELS:
[illegible]h of first water, if known ____ ft.
[illegible]ding level after well completion ____ ft.

[illegible]1) WELL TESTS:
[illegible] well test made? Yes ☐ No ☐ If yes, by whom? ____
[illegible] of test Pump ☐ Bailer ☐ Air lift ☐
[illegible] to water at start of test ____ ft. At end of test ____ ft.
[illegible] ____ gal/min after ____ hours Water temperature ____
[illegible] analysis made? Yes ☐ No ☐ If yes, by whom? ____
Electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth 290 ft. Depth of completed well 292 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	50	Sand, gravel/somewhat cemented.
50	58	Sand, gravel, pebbles.
58	81	Sand, gravel, large pebbles some boulders.
81	124.5	Sand, gravel, large pebbles
124.5	137	Tan silty clay.
137	145	Sand
145	160	Sand, gravel
160	164	Silty clay
164	176	Sand, gravel silty clay 15%
176	178	Red silty clay
178	181	Sand, gravel
181	183	Brown silty clay
183	224	Sand , gravel
224	229	Silty clay with sand and gravel 70
229	248	Sand, gravel with 10% silt
248	292	Green silty clay, sand, gravel , silt

Work started 10-29-84 19 Completed 11-1-84 19

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED ____
(Well Driller)

NAME Howard Pump, Inc.
(Person, firm, or corporation) (Typed or printed)
Address 28753 W. Hwy 58
City Barstw, Calif Zip 92311
License No. 281814 Date of this report 11-16-84

[illegible] (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

HOWARD PUMP, [redacted]
TEST PUMP DATA

NAME Valley Reclamation WELL DESIGNATION/LOCATION Hewitt Landfill STATIC WATER LEVEL 213'

ADDRESS 3200 San Fernando Rd. WELL DIAMETER 8" AIRLINE 271'

Los Angeles, CA 90069 WELL DEPTH 290' PUMP SETTING 271'

LENGTH OF TEST IN HOURS TEST SHEET OF

DATE/ TIME 11-6-84	SPECIFIC CAPACITY	DISCHARGE RATE	DRAWDOWN	PUMPING LEVEL	SAND CONTENT	REMARKS
11:00		100		213		
11:05			2	215	Some	
12:25		100	2	215	Little	
1:28		100	2	215	None	
2:30		100	2	215	None	Pump running fine, 32 amps.
3:00		100	2	215	None	
4:30		100	2	215	None	
5:30		100	2	215	None	Shut down.
11-7-84						
6:00		100	2	215	None	Started pump, slightly cloudy discharge, cleared up quick
7:00		100	2	215	None	
9:00		100	2	215	None	
10:30		100	2	215	None	Poured cement around vault.
11:30		100	2	215	None	
12:30		100	2	215	None	
2:00		100	2	215	None	
3:30		100	2	215	None	
4:30		100	2	215	None	
5:30		100	2	215	None	
6:00		100	2	215	None	Shut Down.

HOWARD PUMP, INC.
TEST PUMP DATA

NAME Valley Reclamation WELL DESIGNATION/LOCATION ~~Hewitt~~ Landfill STATIC WATER LEVEL 213'

ADDRESS 3200 San Fernando Rd. WELL DIAMETER 8" AIRLINE 271'

Los Angeles, CA 90069 WELL DEPTH 290' PUMP SETTING 271'

LENGTH OF TEST IN HOURS TEST SHEET OF

DATE/ TIME 11-8-84	SPECIFIC CAPACITY	DISCHARGE RATE	DRAWDOWN	PUMPING LEVEL	SAND CONTENT	REMARKS
6:30		100	2	215	None	
7:30		100	2	215	None	
8:30		100	2	215	None	
9:30		100	2	215	None	
11:00		100	2	215	None	
12:00		100	2	215	None	End Test.

APPENDIX B

BROWN AND CALDWELL
ANALYTICAL LABORATORIES

LOG NO: P84-11-118

Received: 08 NOV 84
Reported: 06 DEC 84

Corrected Report
12/17/84

LeROY CRANDALL & ASSOCIATES
711 N. ALVARADO ST.
LOS ANGELES, CA 90026

ATTN: Alice Campbell

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
11-118-1	HEWITT WELL #1	08 NOV 84

PARAMETER	11-118-1
Carbonate Alk (as CO3), mg/L	0.0
Bicarbonate Alk (as HCO3), mg/L	300
Hydroxide Alk (as CaCO3), mg/L	0.0
Calcium (EDTA Titration), mg/L	11
Magnesium, mg/L	14
Chloride, mg/L	3.2
Copper, mg/L	<0.06
Surfactants, mg/L	<0.1
Iron, mg/L	<0.059
Manganese, mg/L	<0.032
pH, Units	7.8
Potassium, mg/L	3.5
Sodium, mg/L	34
Sulfate, mg/L	220
Specific Conductance, umhos/cm	830
Filterable Residue, mg/L	420
Zinc, mg/L	<0.013
Nitrate (as NO3), mg/L	15

LOG NO: P84-11-118

Received: 08 NOV 84
Reported: 06 DEC 84

LeROY CRANDALL & ASSOCIATES
711 N. ALVARADO ST.
LOS ANGELES, CA 90026

ATTN: Alice Campbell

REPORT OF ANALYTICAL RESULTS

OG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
-118-1	HEWITT WELL #1	08 NOV 84

ARAMETER	11-118-1
urgeable Priority Pollutants	
Extraction	11/19/84
crolein, ug/L	<10
crylonitrile, ug/L	<10
Ethylbenzene, ug/L	3
etrachloroethylene, ug/L	3
oluene, ug/L	8
Other Purgeable Priority Pollutants, ug/L	<1
emi-Quantified Results **	
Xylene Isomers, ug/L	20

** Quantification based upon comparison of total ion count of the compound with that of the nearest internal standard

Edward Wilson, Laboratory Director

HEWITT

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section
SAMPLE FOR CHEMICAL ANALYSIS

Date Received: 11-8-84 (Leave Blank) | Lab. No.: 13588

Purveyor and Address (include city and county): VALLEY RECLAMATION-HEWITT PIT | System Number | Serial Number: C 07970

Sampling Point: NEW WELL #1 - WEST | Collected by: [illegible] | Date and Hour Collected: 11-8-84 1215

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other Obs Well

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☑ RWQCB # 4 ☐ Other

Results are expressed as mg/l unless specified

☐ GENERAL MINERAL ANALYSIS (mg/l as $CaCO_3$)

☐ Ca		☐ Hardness	
☐ Mg		☐ HCO_3	
☐ Fe Total		☐ CO_3	
☐ Mn		☐ OH	
☐ Na		☐ Total Alk.	
☐ K		☐ Cl	
☐ pH		☐ SO_4	
☐ Total Dissolved Solids		☐ F	
		☐ NO_3	

TRACE ELEMENTS

☐ Al ☐ Ag ☐ As ☐ B ☐ Cd ☐ Cr ☐ Cu ☐ Hg ☐ Pb ☐ Ni ☐ Se ☐ Zn ☐

☑ Other analyses desired (specify):
VOA
see attached sheet

Date Reported: 11-9-84 | Analyst: PH

☐ Turb. TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond. µmhos/cm	☐ ORG-N	☐ Grease	☐ Set Solids ml/l/hour	☐ MBAS

Form LAB-800 (2-80)

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section
SAMPLE FOR CHEMICAL ANALYSIS

Date Received: 11-8-84 (Leave Blank) | Lab. No.: 13589

Purveyor and Address (include city and county): VALLEY RECLAMATION-HEWITT PIT | System Number | Serial Number: C 07974

Sampling Point: TRIP BLANK | Collected by: Lab-(EIR) | Date and Hour Collected: 11-8-84 1130

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other TRIP BLANK

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☑ RWQCB # 4 ☐ Other

Results are expressed as mg/l unless specified

☐ GENERAL MINERAL ANALYSIS (mg/l as $CaCO_3$)

☐ Ca		☐ Hardness	
☐ Mg		☐ HCO_3	
☐ Fe Total		☐ CO_3	
☐ Mn		☐ OH	
☐ Na		☐ Total Alk.	
☐ K		☐ Cl	
☐ pH		☐ SO_4	
☐ Total Dissolved Solids		☐ F	
		☐ NO_3	

TRACE ELEMENTS

☐ Al ☐ Ag ☐ As ☐ B ☐ Cd ☐ Cr ☐ Cu ☐ Hg ☐ Pb ☐ Ni ☐ Se ☐ Zn ☐

☑ Other analyses desired (specify):
VOA
Chloroprene interference = 0.25 µg/l

Date Reported: 11-9-84 | Analyst: PH

☐ Turb TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond µmhos/cm	☐ ORG-N	☐ Grease	☐ Set Solids ml/l/hour	☐ MBAS

Form LAB-800 (2-80)

ATE OF CALIFORNIA - HEALTH AND WELFARE AGENCY
PARTMENT OF HEALTH SERVICES
IC AND ENVIRONMENTAL HEALTH DIVISION (213) 620-3376
1449 West Temple Street, Room 101
Los Angeles, California 90026

AN ATTACHMENT TO LAB-804

SAMPLES FOR CHEMICAL ANALYSIS

HEWITT PIT
NEW WELL #1

LAB NUMBER: 13588

SERIAL NUMBER: C 079 70

ANALYST: P.H

DATE REPORTED: 11-9-84

VOA
1. n-pentane
2 Petroleum distillate hydrocarbon C_6
3. Dipropyl ether
4. Benzene = 0.54 ug/l
5 Toluene = 7.2 ug/l
6. Perchloroethylene = 1.9 ug/l
7. Ethyl benzene = 2.3 ug/l
8. M,P-Xylenes = 9.8 ug/l
9 O-Xylene = 3.4 ug/l
10. n-propyl benzene = trace
11. Ethyl toluene isomers
12 Trimethyl benzene isomers
13 3.4,4,7,7a-tetrahydro-4,7-methanoindane
14 Indan

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section
SAMPLE FOR CHEMICAL ANALYSIS

Date Received | Lab. No. (Leave Blank) 13590

Purveyor and Address (include city and county): VALLEY RECLAMATION HEWITT PIT

System Number | Serial Number: C 07971

Sampling Point: NEW WELL #1 - WEST

Collected by: ROBERT BOT | Date and Hour Collected: 11-8-84 1215

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other OIL WELL

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☑ RWQCB # 4 ☐ Other

Results are expressed as mg/l unless specified

☐ GENERAL MINERAL ANALYSIS (mg/las $CaCO_3$)

☐ Ca		☐ Hardness	
☐ Mg		☐ HCO_3	
☐ Fe Total		☐ CO_3	
☐ Mn		☐ OH	
☐ Na		☐ Total Alk.	
☐ K		☐ Cl	
☐ pH		☐ SO_4	
☐ Total Dissolved Solids		☐ F	
		☐ NO_3	

TRACE ELEMENTS

☐ Al ☐ Ag ☐ As ☐ B ☐ Cd ☐ Cr ☐ Cu ☐ Hg ☐ Pb ☐ Ni ☐ Se ☐ Zn ☐

☑ Other analyses desired (specify):

BNA

Naphthalene = trace

Date Reported: 11-21-84 | Analyst: P.A

☐ Turb. TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond. μmhos/cm	☐ ORG-N	☐ Grease	☐ Sel Solids ml/l/hour	☐ MBAS

Form LAB-800 (2-80)

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section
SAMPLE FOR CHEMICAL ANALYSIS

Date Received: 11-8-84 | Lab. No. (Leave Blank) 13587

Purveyor and Address (include city and county): VALLEY RECLAMATION HEWITT PIT

System Number | Serial Number: C 07972

Sampling Point: New Well #1 - WEST

Collected by: ROBERT BOT | Date and Hour Collected: 11-8-84 1215

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other OIL WELL

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☑ RWQCB # 4 ☐ Other

Results are expressed as mg/l unless specified

☑ GENERAL MINERAL ANALYSIS (mg/las $CaCO_3$)

☐ Ca	80.	☐ Hardness	265.
☐ Mg	1.2	☐ HCO_3	274.
☐ Fe Total	<0.1	☐ CO_3	0.
☐ Mn	<0.02	☐ OH	0.
☐ Na	58.	☐ Total Alk.	274.
☐ K	3.7	☐ Cl	25.
☐ pH	7.8	☐ SO_4	45.
☐ Total Dissolved Solids	455	☐ F	0.2
		☐ NO_3	1.4

TRACE ELEMENTS

☐ Al
☑ Ag <0.001
☑ As <0.01
☐ B
☑ Cd <0.001
☑ Cr <0.01
☑ Cu <0.01
☑ Hg <0.001
☑ Pb <0.01
☑ Ni <0.05
☑ Se <0.01
☑ Zn <0.01
☑ Ba 0.143

☑ Other analyses desired (specify):

(HM)

Sb — < 0.02 mg/l

Be — < 0.01 mg/l

Tl — < 0.01 mg/l

Cr^{+6} — = <.001 mg/l

Date Reported: 11-21-84 | Analyst: ST MI CL

☐ Turb. TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond. μmhos/cm	☐ ORG-N	☐ Grease	☐ Sel Solids ml/l/hour	☐ MBAS

Form LAB-800 (2-80)

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section

SAMPLE FOR CHEMICAL ANALYSIS

Date Received: 11-8-84 (Leave Blank)

Lab. No.: 13586

Purveyor and Address (include city and county): VALLEY REGIONAL/MT. HEWITT P.T

System Number:

Serial Number: C 07973

Sampling Point: NEW WELL #1 - WEST

Collected by: ROMSTEDT

Date and Hour Collected: 11-8-84 12:15

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other CO WELL

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☐ ~~RWQCB~~ # 4 ☐ Other

Results are expressed as mg/l unless specified

☐ GENERAL MINERAL ANALYSIS

		(mg/l as $CaCO_3$)	
☐ Ca		☐ Hardness	
☐ Mg		☐ HCO_3	
☐ Fe Total		☐ CO_3	
☐ Mn		☐ OH	
☐ Na		☐ Total Alk.	
☐ K		☐ Cl	
☐ pH		☐ SO_4	
☐ Total Dissolved Solids		☐ F	
		☐ NO_3	

TRACE ELEMENTS

☐ Al ☐ Ag ☐ As ☐ B ☐ Cd ☐ Cr ☐ Cu ☐ Hg ☐ Pb ☐ Ni ☐ Se ☐ Zn ☐

☑ Other analyses desired (specify):

COD — 1 mg/l

CN^- — < 0.001 mg/l

Phenol - 0.002 mg/l

Date Reported: 11-9-84

Analyst: RS

☐ Turb. TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond μ mhos/cm	☐ ORG-N	☐ Grease	☐ Set Solids ml/l/hour	☐ MBAS

Form LAB-600 (2-80)

State of California - Department of Health Services
Sanitation and Radiation Laboratory Section
Southern California Laboratory Section

SAMPLE FOR CHEMICAL ANALYSIS

Date Received: 11-8-84 (Leave Blank)

Lab. No.: 13586

Purveyor and Address (include city and county): VALLEY RANDOM/MONTEBELLO HEWITT PIT

System Number:

Serial Number: C 07973

Sampling Point: NEW WELL #1 - WEST

Collected by: REMSTEDT

Date and Hour Collected: 11-8-84 12:15

Type of Sample: ☐ Raw Surface Water ☐ Drinking Water ☐ Raw ☐ Treated ☐ Waste water: ☐ Raw ☐ Chlorinated ☐ Trade Waste ☑ Other GW WELL

Send Report To: ☐ WSS Dist. # ☐ County HD ☐ DOT Dist. # ☐ National Park Serv. ☑ RWQCB # 4 ☐ Other

Results are expressed as mg/l unless specified

☐ GENERAL MINERAL ANALYSIS

		(mg/l as $CaCO_3$)	
☐ Ca		☐ Hardness	
☐ Mg		☐ HCO_3	
☐ Fe Total		☐ CO_3	
☐ Mn		☐ OH	
☐ Na		☐ Total Alk.	
☐ K		☐ Cl	
☐ pH		☐ SO_4	
☐ Total Dissolved Solids		☐ F	
		☐ NO_3	

TRACE ELEMENTS

☐ Al ☐ Ag ☐ As ☐ B ☐ Cd ☐ Cr ☐ Cu ☐ Hg ☐ Pb ☐ Ni ☐ Se ☐ Zn ☐

☑ Other analyses desired (specify):

COD — 1 mg/L

CN^- — < 0.001 mg/L

Phenol - 0.002 mg/L

Date Reported: 11-9-84

Analyst: RS

☐ Turb. TU	☐ NH_3-N	☐ BOD	☐ Susp. Solids	☐ PO_4
☐ Spec. Cond μmhos/cm	☐ ORG-N	☐ Grease	☐ Set Solids ml/l/hour	☐ MBAS

Form LAB-800 (2-80)

GAS ANALYSIS

Parts Per Million (v/v)

Compound	Hewitt
Ethane	11.6
Ethylene	6.1
Propane	4.4
Propylene	4.7
iso-Butane	1.6
n-Butane	TR<1
Butenes	2.1
iso-Pentane	TR<1
n-Pentane	TR<1
Pentenes	ND<1
Hexanes	TR<1
Heptanes	9.2
Benzene	2.7
Toluene	9.5
Vinyl Chloride	2.0
Trichloroethylene	1.7
Perchloroethylene	2.9

ND - This compound was not detected; the limit of detection for this analysis is less than the amount stated in the table above.

TR - Trace, this compound was present, but was below the level at which concentration could be determined.

LITHOLOGIC LOG

Owner: _____ Project No.: 58-7057

Drilled by: Datum Exploration Well No.: HLS-88-1 (Lysimeter)

Logged by: Vince Richards

Location: Calmat Storage Yard @ Laurel Canyon and Sherman Way

Drilling Method: Hollow Stem Auger Date Completed: 04-12-88

Borehole Depth: 52' Borehole Diameter: 10"

Casing: _____

Perforations: _____

Static Water Level: _____ Drawdown: _____ Yield: _____

Specific Capacity: _____ gpm/ft Electrical Conductance: _____ micromhos

Ground Elevation: _____ Top of Casing Elevation: _____

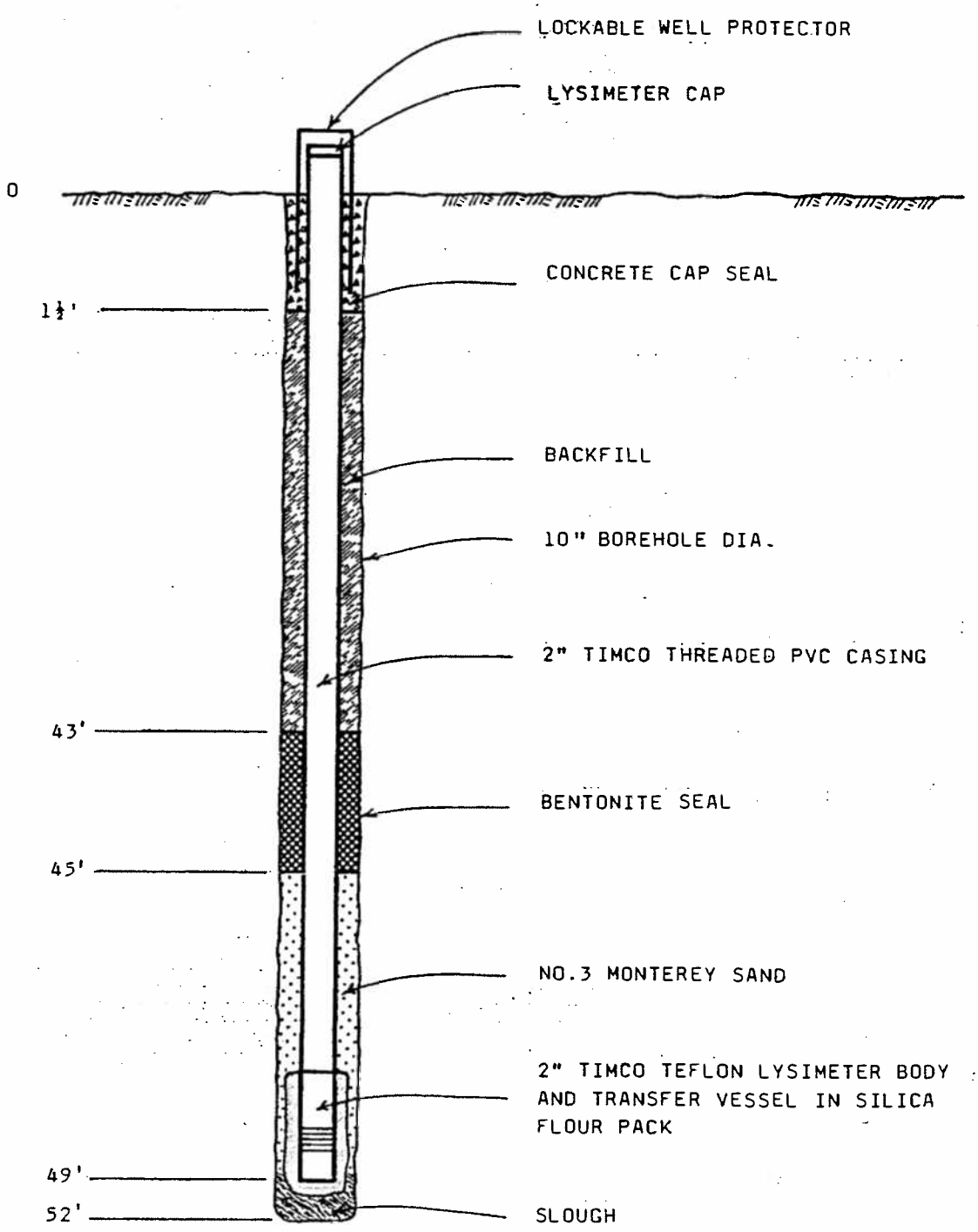
Depth (feet)	Sample Interval	Graphic Log	Description of Materials	
10			SAND AND GRAVEL	Light grey fine to coarse sand and fine to coarse cobble gravel. Gravels are subangular to rounded and composed of metamorphic and igneous material. Alluvium slightly damp, well graded.
20				
30				Gravel size decreasing, mostly fine to medium pebble gravel. Abundant sand.
40				
50				Gravel increasing in abundance. Total depth: 52'

Remarks:

APPENDIX D

LYSIMETER WELL LOGS AND

CONSTRUCTION DETAILS



LYSIMETER HLS 88-1 CONSTRUCTION DETAILS

HEWITT DOWNGRADIENT

NOT TO SCALE

LAW ENVIRONMENTAL, INC.

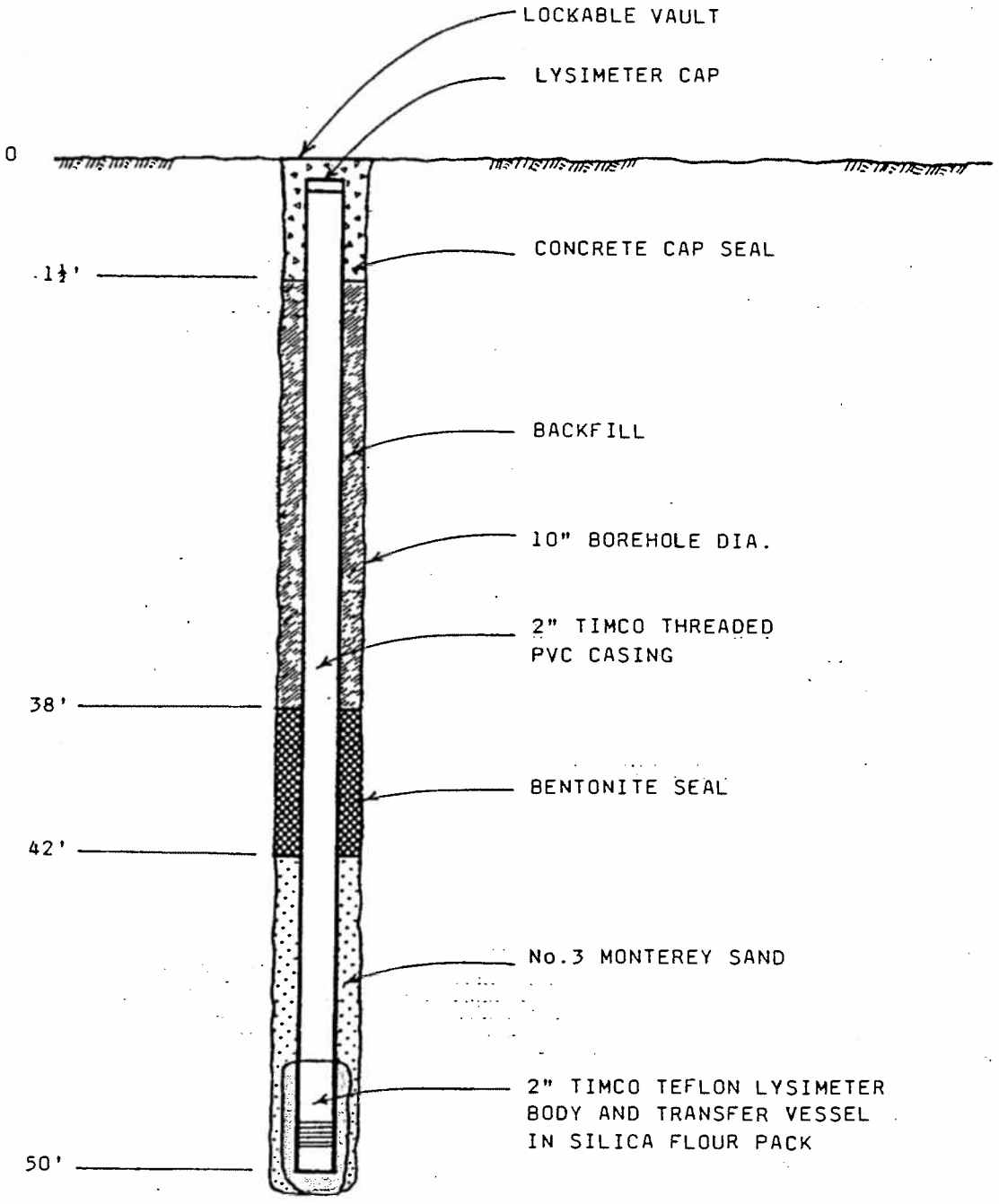
PROJECT No. 58-7057 DATE 6/2/88 PROJ. MGR. SHC DFTR. M.G.

LITHOLOGIC LOG

Owner: Cal Mat
Drilled by: Datum Exploration
Logged by: Vince Richards
Location: Saticoy St. (cul de sac) west of Hollywood Fwy.
Project No.: 58-7057
Well No.: HLS-88-2 (Lysimeter)
Drilling Method: Hollow Stem Auger
Date Completed: 04-26-88
Borehole Depth: 50'
Borehole Diameter: 10"
Casing:
Perforations:
Static Water Level:
Drawdown: Yield:
Specific Capacity: gpm/ft
Electrical Conductance: micromhos
Ground Elevation:
Top of Casing Elevation:

Depth (feet)	Sample Interval	Graphic Log	Description of Materials
			SAND AND GRAVEL — Light grey fine to coarse sand and fine to coarse gravel. Gravels are subangular to rounded and composed of metamorphic and igneous materials. Alluvium slightly damp, well graded.
10			
20			
30			
40			
50			Total Depth: 50'

Remarks:



LYSIMETER HLS 88-2 CONSTRUCTION DETAILS

HEWITT UPGRADIENT

NOT TO SCALE

LAW ENVIRONMENTAL, INC.

PROJECT No. 58-7057 DATE 6/2/88 PROJ. MGR. SHC DFTR. M.G.

APPENDIX E

LEACHATE WELL LOGS

AND REFUSE MOISTURE CONTENT

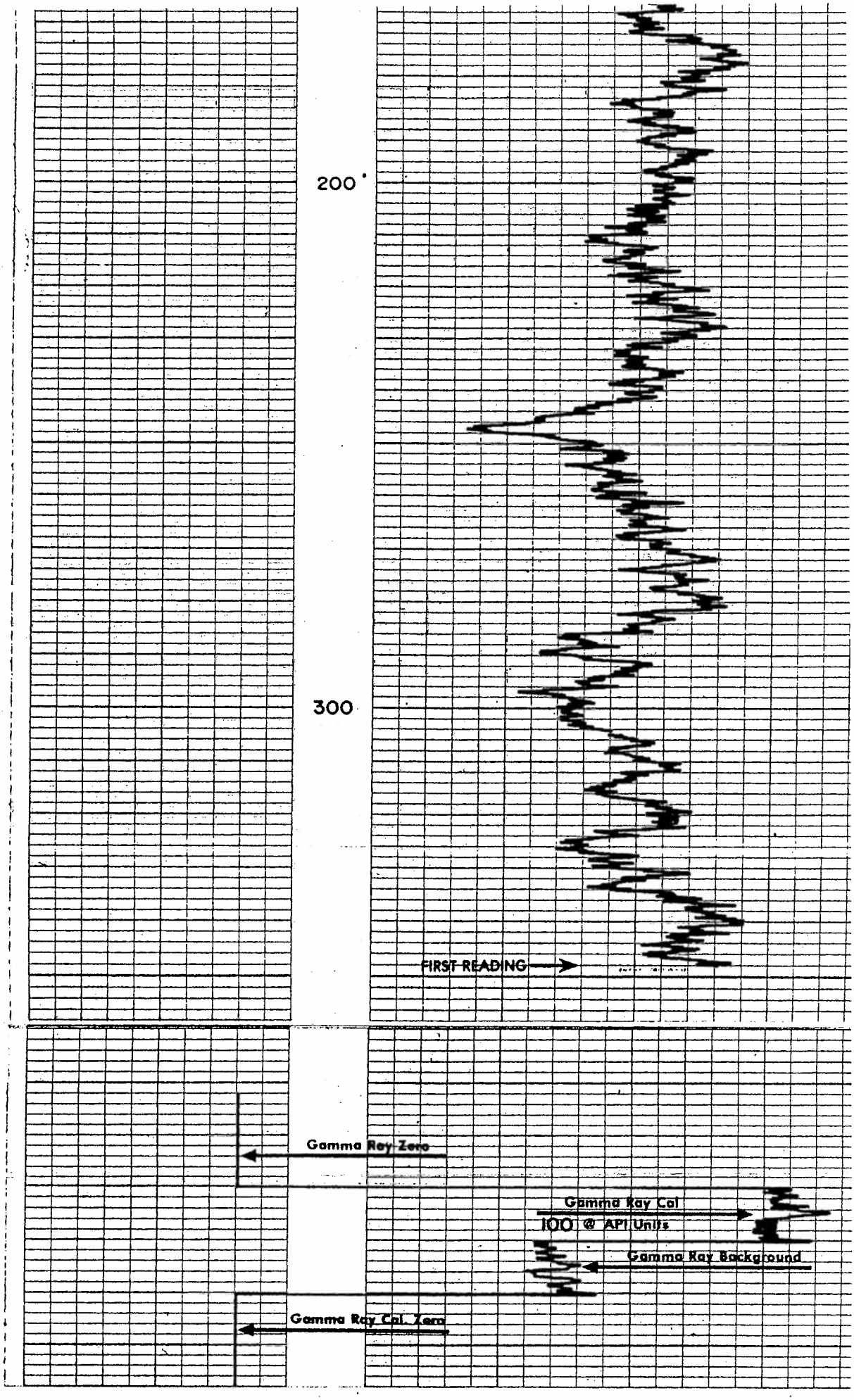
LITHOLOGIC LOG

Owner: CalMat
Location: Hewitt Landfill
Drilled by: Datum Exploration
Logged by: Steve McArdle
Drilling Method: Air Rotary
Borehole Depth: 76 feet
Borehole Diameter: 6 inches
Casing: 6" steel
Perforations: botton 40'
Ground Elevation: _____ feet/asl
Top of Casing Elevation: _____

Project No.: 58-7057
Well No.: Hewitt Leachate Well
Page 1 of 2
Date Completed: 04-12-88
Static Water Level: dry
Drawdown: _____ Yield: _____
Electrical Conductance: _____ micromhos
Specific Capacity: _____ gpm/ft

Depth (feet)	Sample Interval	Graphic Log	Description of Materials
			FILL
			Silt, sand, and gravel: no trash; tan to gray; slightly moist.
			Chips of wood common, paper and plastic not seen; material in a matrix of silty sand: black; small amounts of gravel; slightly to moderately moist. Little or no odor.
10			
			Increase in gravel amount; pieces of paper, plastic and metal noted.
20			
			At 25', paper (including carbon paper), plastic. Drill bit clogged up, as drilling slow and no material showing up in driller's box. Material that clogged up bit is pulverized wood/cardboard.
30			Sand and gravel: gravel amount 80% - demolition debris, no trash.
40			
50			Increase in sand amount - demolition debris, no trash.

Remarks:


200
300
FIRST READING
Gamma Ray Zero
Gamma Ray Cal
100 @ API Units
Gamma Ray Background
Gamma Ray Cal. Zero

Welenco

WELL ENGINEERING SURVEYS

Gamma-Ray Log

COMPANY HOWARD PUMP, INC. / LAW ENVIRONMENTAL, INC.

WELL HEWITT - Second Down Gradient Well

FIELD NORTH HOLLYWOOD

STATE CALIFORNIA COUNTY LOS ANGELES

LOCATION: CAL MAT SELF STORAGE
A 33

SEC. TWP. RGE.

OTHER SERVICES: E-LOG

PERMANENT DATUM: G.L. ELEV.

LOG MEASURED FROM: G.L. FT. ABOVE PERM. DATUM

DRILLING MEASURED FROM: G.L.

ELEV.: K.B.

D.F.

G.L.

DATE	11-25-87		
RUN NO.	ONE		
TYPE LOG	GAMMA-RAY		
DEPTH-DRILLER	352'		
DEPTH-LOGGER	349'		
BOTTOM LOGGED INTERVAL	348'		
TOP LOGGED INTERVAL	0'		
TYPE FLUID IN HOLE	BENTONITE & POLYMER MUD		
MAX. REC. TEMP., DEG. F.	N/A		
RECORDED BY	D.L. CRAIG		
WITNESSED BY	MR. MC ARDLE		

RUN NO.	BORE-HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
1	9-7/8	0'	352'	-	-	-	-

EQUIPMENT DATA

	Gamma Ray 1	Neutron
Run No.	ONE	
Tool Model No.	GZ3XM	
Diameter	1.5"	
Detector Model No.	-	
Type	SCINT.	
Length	4"	
Distance to N. Source	-	
General		
Holst Truck No.	CU-1 BFL	
Instrument Truck No.	CU-1 BFL	
Tool Serial No.	272	

	Neutron
Run No.	
Log Type	
Tool Model No.	
Diameter	
Detector Model No.	
Type	
Length	
Source Model No.	
Serial No.	
Spacing	
Type	
Strength	

LOGGING DATA

Run No.	Depths From	Depths To	Speed Ft/Min.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API G.R. Units per Log Div.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API N. per Log
	General					Gamma Ray				Neutron	
1	348'	0'	20	4	100/750	5L	12.5				

Reference Literature:

Remarks:

DEPTHS

GAMMA-RAY

Fold Here

WELENCO

WELL ENGINEERING SURVEYS

ELECTRIC LOG

FILING NO

COMPANY: HOWARD PUMP, INC

WELL: Hewitt Upgradient

FIELD: NORTH Hollywood

STATE: CALIFORNIA COUNTY: LOS ANGELES

LOCATION: Saticoy St. 30' W of end. near Hollywood Fwy

SEC ____ TWP ____ RGE ____

OTHER SERVICES: NONE

Permanent Datum: G.L. Elev. ____

Log Measured From: G.L. ____ Ft. Above Perm. Datum

Drilling Measured From: G.L.

Elev.: K.B. ____ D.F. ____ G.L. ____

Date	10-31-84			
Run No.	ONE			
Depth—Driller	293'			
Depth—Logger	293'			
Btm. Log Inter.	292'			
Top Log Inter.	27'			
Casing—Driller	— @	@	@	@
Casing—Logger	—			
Bit Size	12¼"			
Type Fluid in Hole	MUD			
Dens. | Visc.	— | —	|	|	|
pH | Fluid Loss	— | — ml	| ml	| ml	| ml
Source of Sample	CIRCULATED			
R_m @ Meas. Temp.	4.0 @ 88 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}				
R_m @ BHT	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	6 HOURS			
Max. Rec. Temp.	°F	°F	°F	°F
Equip. | Location	F? | BFL			
Recorded By	D.L. CRAIG			
Witnessed By	MS. CAMPBELL			

FIELD PRINT

Fold Here — This Heading and Log Conform To API RP 31

Remarks

Changes in Mud Type or Additional Samples				
Date Sample No.				
Depth—Driller				
Type Fluid in Hole				
Dens. | Visc.	|		|	
pH | Fluid Loss	| ml		| ml	
Source of Sample				
R_m @ Meas. Temp.	@ °F		@ °F	
R_{mf} @ Meas. Temp.	@ °F		@ °F	
R_{mc} @ Meas. Temp.	@ °F		@ °F	
Source: R_{mf} R_{mc}				
R_m @ BHT	@ °F		@ °F	
R_{mf} @ BHT	@ °F		@ °F	
R_{mc} @ BHT	@ °F		@ °F	

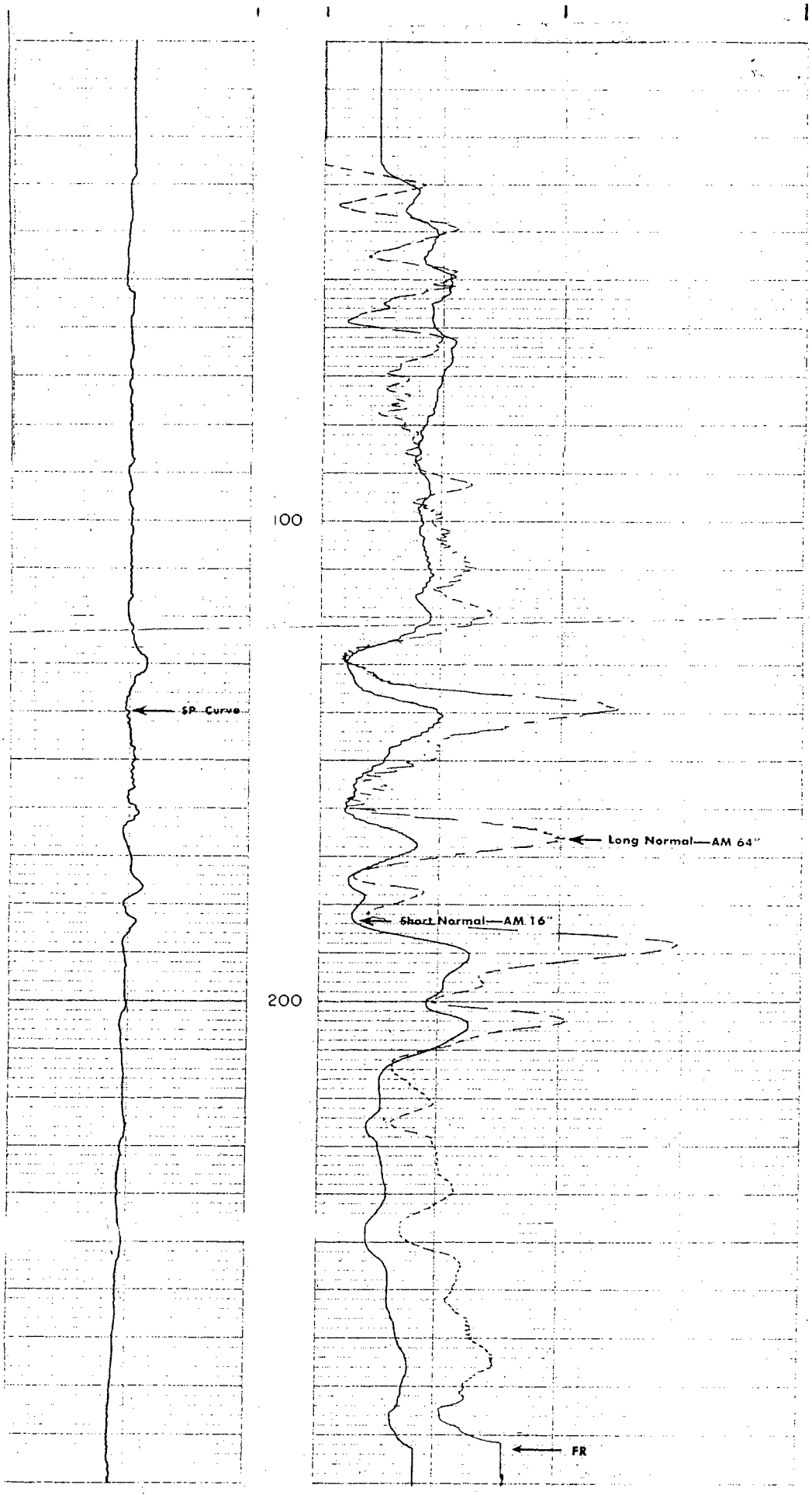
Scale Changes

Type Log	Depth	Scale Up Hole	Scale Down Hole

Equipment Data

Run No.	Tool Type	Pad Type	Tool Position	Other
ONE	ELECTRIC LOG		FREE	

SPONTANEOUS POTENTIAL millivolts	Depths	RESISTIVITY ohms. m²/m	RESISTIVITY ohms. m²/m
+		SHORT NORMAL 16 Inch 0 — 100	
		LONG NORMAL 64 Inch 0 — 100	RESISTANCE Detail Curve


100
200
SP Curve
Long Normal—AM 64"
Short Normal—AM 16"
FR

welenco

WELL ENGINEERING SURVEYS

ELECTRIC LOG

FILING NO

COMPANY HOWARD PUMP, INC

WELL HEWITT Upgradient

FIELD NORTH Hollywood

STATE CALIFORNIA COUNTY LOS ANGELES

LOCATION Saticoy St. 30' W of end near Hollywood Fwy

SEC ____ TWP ____ RGE ____

OTHER SERVICES NONE

Permanent Datum: G.L. Elev. ____

Log Measured From G.L. Ft. Above Perm. Datum

Drilling Measured From G.L.

Elev.: K.B. ____ D.F. ____ G.L. ____

Date	10-31-84			
Run No.	ONE			
Depth—Driller	293'			
Depth—Logger	293'			
Btm. Log Inter.	292'			
Top Log Inter.	27'			
Casing—Driller	- @	@	@	
Casing—Logger	-			
Bit Size	12¼"			
Type Fluid in Hole	MUD			
Dens. / Visc.	-			
pH / Fluid Loss	- / - ml	/ ml	/ ml	/ ml
Source of Sample	CIRCULATED			
R_m @ Meas. Temp.	40 @ 68 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}				
R_m @ BHT	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	2 HOURS			
Max. Rec. Temp.	85 °F	°F	°F	°F
Equip. Location	57 BFL			
Recorded By	D.A. CRAIG			
Witnessed By	M.S. CAMPBELL			

FIELD PRINT

This Reading and Log Conform To API RP 31

Scale Changes: Type Log | Depth | Scale Up Hole | Scale Down Hole

Equipment Data: Run No. | Tool Type | Pad Type | Tool Position | Other

Run No. ONE ELECTRIC LOG FREE

Types and Sources of Samples in Mud Type or Additional Samples

Sample No. | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Rm @ BHT | Rmf @ BHT | Rmc @ BHT

Driller | Fluid in Hole | Visc. | Fluid Loss

RESISTIVITY ohms. m²/m | SHORT NORMAL 16 Inch | LONG NORMAL 64 Inch

RESISTANCE Detail Curve

Depths

SPONTANEOUS POTENTIAL millivolts